

# FACILITY MASTER PLAN

Cornell College of Agriculture and Life Sciences

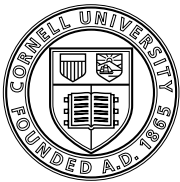
January 2012



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STRATEGIES  
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FINAL DRAFT

# FACILITY MASTER PLAN

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Cornell College of Agriculture and Life Sciences

January 2012



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# Executive Summary

## Overview

The College of Agriculture and Life Sciences has reached a critical juncture. The development and adaptation of our facilities has not kept pace with the needs and expectations of our students, faculty and researchers. Implementation of the College's academic mission, and our day-to-day activities, has been compromised by the poor quality of facilities. The College's facilities do not reflect its world class reputation nor the quality expected of an Ivy League institution. Something must be done if CALS is to remain the best in the world.

Building condition and space quality issues are so pervasive that they cannot be separated from our other priorities, including faculty recruitment. Successful implementation of CALS' academic mission requires a physical environment that effectively supports the key activities of teaching, research and extension. This Facility Master Plan (FMP) is intended to help CALS fully realize its academic mission and purpose, make optimal use of space and land resources, and plan in a coherent and organized fashion for the coming 20 years. This plan will play a critical role in our future.

CALS is the largest of the Cornell Contract College, and maintains an extensive inventory of campus-wide academic buildings, the stand-alone New York State Agricultural Experiment Station in Geneva (NYSAES Geneva), large greenhouse complexes in Ithaca and Geneva, hundreds of countryside properties, and over 10,000 acres of agricultural and natural lands across New York State and beyond. The College's facilities and landholdings are a significant presence on the Ithaca Campus and represent Cornell University at Geneva and other locations in New York and other states.

## FMP Goals, Planning Principles and Vision (Chapters 1 & 2)

The following goals were identified at the outset of the planning process to ensure appropriate and effective outcomes from the FMP study.

- Establish the extent, use and condition of CALS' existing inventory of buildings and lands;
- Determine the current and future functional space needs of CALS' many users;
- Establish the relative priority of CALS' various facility needs;
- Match the priority facilities needs to funding opportunities and mechanisms;
- Identify utilization strategies and priorities for lands controlled by CALS with a focus on lands used to support academic and research functions;
- Identify the ongoing costs to repair and maintain the existing physical inventory; and
- Integrate needs with Cornell University goals, policies and expectations.

A series of planning principles were also developed to guide the evolution and outcomes of the Facility Master Plan:

1. Achieve quality, equity and adequacy of facilities
2. Prioritize sustainability
3. Use resources efficiently
4. Manage the countryside as defined by the Cornell campus master plan
5. Integrate with the campus master plan and university goals
6. Strengthen facility planning and space management practices
7. Reinforce CALS' presence and home on the Ithaca Campus

Together, the goals, planning principles and vision provide the overall framework and direction for the FMP. In addition to these, more detailed planning objectives are identified in Chapters 5-7 to provide targets for academic space, greenhouses and countryside resources. These objectives ensure that the detailed facility planning strategies for all CALS facilities and lands effectively meet the needs of the College and fully implement the FMP planning principles.

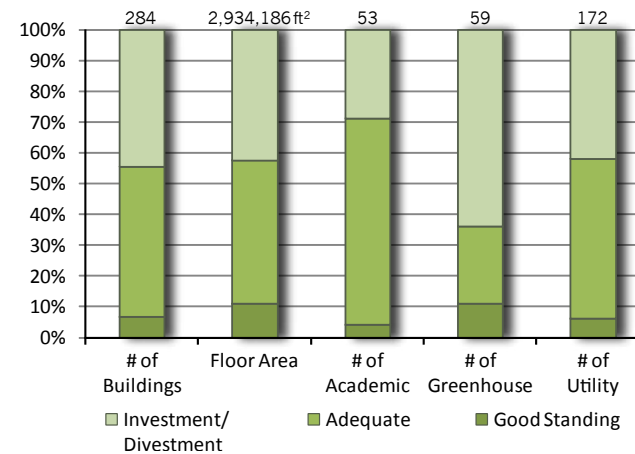
The FMP Vision illustrates the potential physical outcomes of recommended planning policy in 20 years' time. CALS has been integral to Cornell University from its inception, providing the physical structure and identity with such places as the Ag Quad and Tower Road, around which Cornell has grown. This plan will guide the renewal of CALS' facilities and resources within this physical structure, advancing the College's mission in partnership with the University.

### Facility Assessment (Chapter 3)

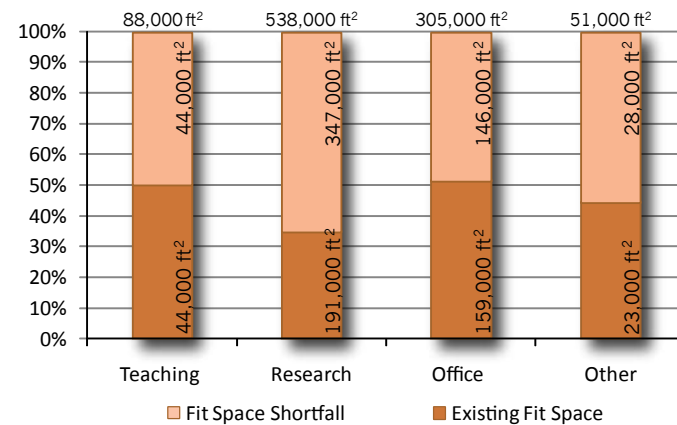
The FMP process included analyses of CALS facilities at the Ithaca Campus, across Tompkins County, and in and around NYSAES Geneva. Detailed building condition assessments were carried out on nearly 300 buildings, and space quality assessments were carried out on all major academic buildings.

The results of the assessment processes were not unexpected. We face significant building and space quality issues. Approximately 41% of CALS' buildings are in need of significant investment (or divestment), with a pressing need for short-term capital investment just to address building condition issues that have been exacerbated by deferred maintenance (Figure ES.1). Space quality and appropriateness issues are similarly pressing. Approximately 37% of major academic space will still be deficient or unfit for its current use after current renovation projects are complete (Figure ES.2). A piece-meal approach to deferred maintenance and building renewal is no longer a viable option.

Given the scale and diversity of CALS' buildings and territory, the facility renewal process is a monumental task. Alignment of facilities with CALS' academic activities within the campus structure will require significant consideration and investment over the 20-year planning horizon.



**Figure ES.1: The building condition assessment highlights significant building condition issues that CALS must address in coming years even after current renovation projects.**



**Figure ES.2: The space quality assessment highlights the significant space issues that CALS must address in coming years.**

## Space Requirement (Chapter 4)

At the forefront of research into food, sustainable development and the environment, CALS plays a central role in many areas of teaching and research throughout the university. Multi-disciplinary activity is embedded both in our academic mission and our location at the center of campus. The Ag Quad will continue to be the College’s heart and home, but facilities and programs on the Ag Quad and east campus will remain and extend beyond to engage surrounding inter-related academic clusters, including biological sciences, human ecology and veterinary medicine.

A space allocation model was generated in the planning process, using space standards, to provide a detailed understanding of CALS’ space requirements over the next 20 years. Though the total space required does not differ significantly from our current space inventory, the quality and condition of space requires significant improvement. This plan is not about creating more space, it is about creating better space for our many and diverse activities. The total space allocation is identified in Table ES.1.

Total FMP Planned Space Requirements	
Department	Total (NASF)
<b>Ithaca (Main Campus)</b>	
College Teaching	78,990
Academic Department	967,734
College Administration	42,680
Service Units	282,538
Library	150,000
Plantations	34,154
Other Programs	16,451
<i>Sub-total</i>	<i>1,572,547</i>
<b>Ithaca (Periphery)</b>	
Academic Department	214,350
Animal Science Farms	289,200
Special & Field Support	69,000
<i>Sub-total</i>	<i>572,550</i>
<b>NYSAES Geneva</b>	
Academic Department	118,792
College Administration	47,130
Service Units	100,120
Library	5,079
Special & Field Support	47,325
<i>Sub-total</i>	<i>318,446</i>
<b>Total (NASF)</b>	<b>2,463,543</b>

Table ES.1: Total FMP Planned Space Requirement

## Space Planning Framework (Chapter 5)

Detailed space planning objectives were developed out of the FMP principles, providing a means for both developing and evaluating the space plans and ensuring the planning principles were embedded in the space plan outcomes.

A planning tool, referred to as “discipline areas”, was devised to explore and frame discussion regarding activities at CALS. Each CALS academic department identified the proportion of its teaching, research and extension activities that relate to each of the College’s four major thematic areas, including Life Sciences, Economic & Community Vitality, Environmental Sciences, and Food & Energy Systems.

The four discipline areas provide a thematic focus for co-locating related departments, supporting a long-term move to plan beyond departmental boundaries. The discipline areas support the identification of strategic major capital projects that allow for the creation of interdisciplinary and translational science buildings. Space programming is oriented towards defining space types without being prescriptive about specific users.

The space plans provide detailed direction for the renewal of CALS’ academic facilities on the Ithaca and Geneva campuses. Anchored in the planning principles, they form a comprehensive planning framework that will ensure an equitable and adequate distribution of high quality facilities across the College.

The space plans illustrate a balance of building renovation and rehabilitation and integrate capital projects that are already in the planning pipeline. In some instances, a need for new facilities (primarily wet labs) has been identified where retrofitting existing buildings cannot meet contemporary space standards. A number of major capital projects, intended to be comprehensive and transformative in scope, are proposed to address critical space needs and space quality issues as well as our academic priorities. While most major directions

involve existing or new CALS’ facilities, facility acquisition or divestment will require coordination with other campus units.

The following major directions have been identified in each of the space plans:

### **Life Science**

- Creation of a new Integrative and Translational Sciences teaching and research facility on the last available development site on the Ag Quad.
- A comprehensive renovation, expansion and restoration of the Plant Science Building in conjunction with the development of the Integrative and Translational Sciences facility
- Comprehensive facilities renewal for existing space to address building fabric and systems deficiencies.

### **Economic & Community Vitality, Central Administrative Units and other Academic Programs**

- Comprehensive renovation and restoration of Warren Hall.
- Phased occupancy of CCC and the balance of Caldwell Hall Space.
- Reallocations of space in Kennedy Hall to consolidate central administration in vacated space.

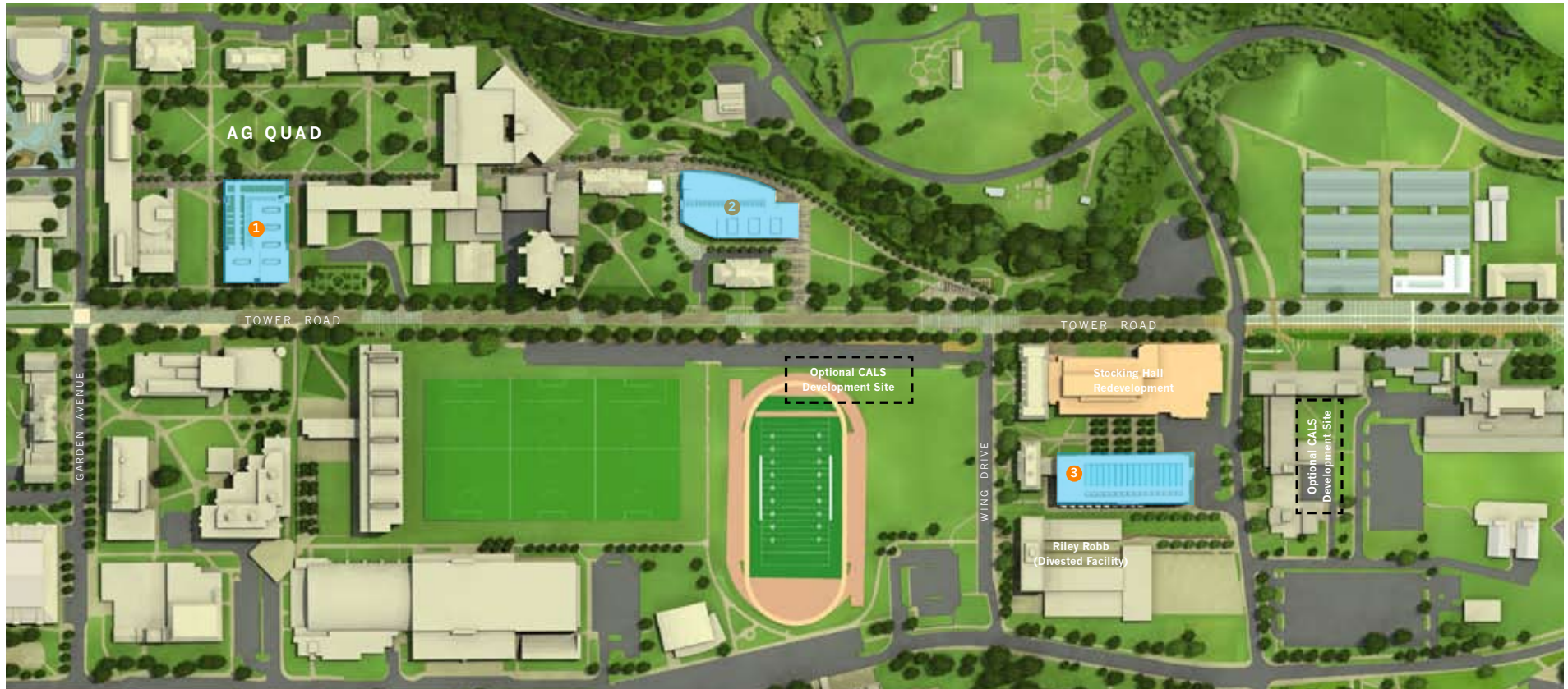
### **Environmental Sciences**

- Comprehensive renovation and restoration of Fernow and Rice Halls.
- Creation of a new Environmental Science teaching and research facility north of Rice Hall or south of Tower Road.
- Comprehensive facilities renewal program of other space to address building fabric and systems deficiencies.
- Decommissioning and demolition of sub-standard buildings, including Bruckner, Poultry Houses and Little Rice.

### Food & Energy Systems (Ithaca)

- Completion of the Stocking Hall Rehabilitation and Addition Project.
- Relocation of the Livestock Pavilion and the Large Animal Research and Teaching Unit to the Large Animal Teaching Complex on Route 366.
- Restoration, renovation and rehabilitation of Wing Hall.
- Creation of a new Food & Energy Systems teaching and research facility located on the site of Wing Hall Wing and the Livestock Pavilion or as an addition to Morrison Hall.

- Renovation and upgrade of Morrison Hall.
- Strategic renewal of Teaching and Research Center Harford facilities.
- Comprehensive facilities renewal program to address that building's deferred maintenance issues.
- Demolition of sub-standard buildings, including Wing Hall Wing, Riley Robb Hall, the Livestock Pavilion and portions of Morrison Hall



① Integrated Translational Sciences Facility

② Environmental Sciences Facility

③ Food & Energy Systems Facility

Figure ES.3: 20-Year plan for the Ithaca Campus highlighting major capital projects

### Food & Energy Systems (Geneva) and Administrative Units

- Implementation of the Agricultural Science Renovation Project to provide flexible wet laboratory and lab support space.
- Facility renewal program to address Barton Laboratory space quality issues.
- Long term projects beyond the 20-year planning horizon:
  - Construction of a new laboratory building located on or adjacent to Hedrick and Sturtevant Halls or immediately south of Collier Drive on the current site of the Utility Storage Barn.
  - Decant lab uses from Hedrick and Sturtevant Halls through building renewal for dry uses, incorporation into a new laboratory building, or demolition/divestment.

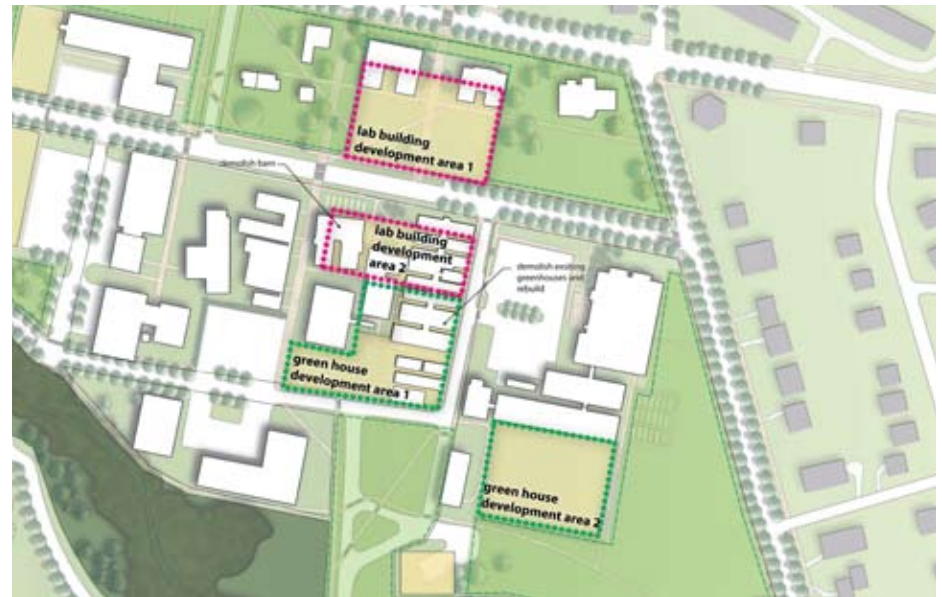


Figure 8.8: NYSAES Geneva greenhouse development areas

## Greenhouse Renewal (Chapter 6)

The building condition assessment study has identified more than half of the greenhouse facilities (by floor area) as priorities for investment or divestment. This critical need for investment is due to both extensive physical deterioration and facility obsolescence. To carry out our academic mission, we require modern greenhouse facilities that are in keeping with contemporary standards. In the long term, this need will be addressed through the complete renewal of greenhouse facilities in both Ithaca and Geneva.

Due to the highly specific nature, scale and use of greenhouse space, generous sized sites should be reserved for the renewal and growth of greenhouse facilities and related laboratory, prep and growth chamber space. A series of greenhouse planning objectives provide guidance for greenhouse renewal.

### Ithaca Greenhouse Renewal

Three areas have been identified for large-scale greenhouse renewal and expansion on the Ithaca Campus, as illustrated on figure ES.4:

- Area 1 includes the existing greenhouse facilities on Tower Road. This area is a priority for full-scale redevelopment.
- Area 2 includes the Guterman laboratory and associated greenhouse facilities, which has opportunities for renewal and expansion.
- Area 3 is a greenhouse development parcel along Route 366 that should be protected for long-term expansion beyond the 20-year planning horizon.

### Geneva Greenhouse Renewal

Two areas have been identified for large-scale greenhouse renewal at NYSAES Geneva, as illustrated on figure ES.5:

- Area 1 includes the existing greenhouse cluster in the center of campus. Significant renewal is expected due to deteriorating building conditions.
- Area 2 includes a southern expansion of the existing greenhouses south of Barton Laboratory. This site should be protected for long-term expansion beyond the 20-year planning horizon.



Figure ES.4: Ithaca Campus Greenhouse Development Areas (outlined in orange)



Figure ES.5: NYSAES Geneva Greenhouse Development Areas (outlined in orange)

## Countryside Resources (Chapter 7)

With a state-wide mandate for teaching, research and extension, CALS has over 10,000 acres of land across New York State. This plan addresses CALS lands within Tompkins County and lands associated with NYSAES Geneva. The following planning objectives provide direction for countryside resources:

- Consolidate and centralize facilities and operations where possible and appropriate
- Reduce duplication in facilities and support operations
- Invest in facilities that support priority teaching, research and operational activities
- Address facilities with a priority for investment or divestment
- Prioritize energy efficiency and sustainable operations

Analysis of the use, character and location of CALS' countryside resources was carried out at two different scales: large study areas, which capture nearly all of CALS lands in Tompkins County and Geneva, and individual farms, yards and research stations within the study areas. The study areas were as follows:

- East Campus and the Countryside Campus Precinct
- Mount Pleasant
- Experimental ponds and surrounding lands
- Freeville
- Arnot Forest
- Teaching and Research Center Harford
- NYSAES Geneva

With the exception of the countryside uses close to the Ithaca campus, significant change is not anticipated for most of the land-based facilities.

East Campus and the lands to the Countryside Campus Precinct contain a diverse range of often interrelated uses. With development pressure on East Campus and expanded rural program requirements, the Countryside Campus Precinct offers a considerable opportunity for the reorganization of CALS facilities and the incorporation of new uses, such as greenhouses and animal-related teaching facilities. Minimizing conflicts and sharing land and resources will be important to the continued coordination of these many uses in what is a relatively small area. Figure ES.X on the following page captures many of the detailed planning directions for this area.

In Geneva, close relationships between the campus and field resources will continue to be supported through the following directions:

- Consolidate operations around the centralized farm yard at Research Farm North and maintain internal field circulation networks
- Maintain and acquire the best land to support NYSAES Geneva's activities
- Protect agricultural lands from urban encroachment and conflicts.

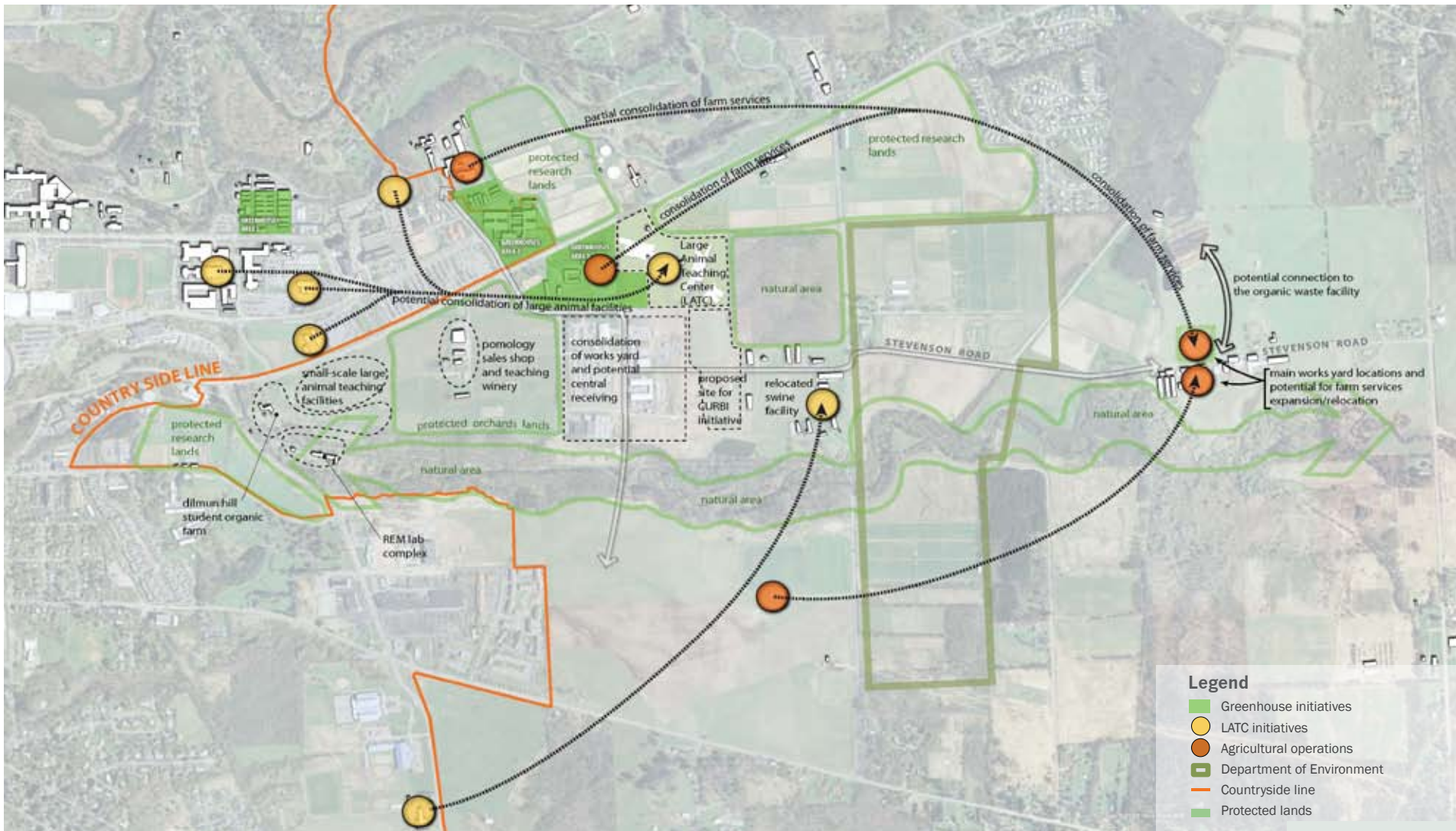


Figure ES.6: Planning directions for East Campus and the Countryside Campus Precinct

## Strategy for Renewal (Chapter 8)

Through the implementation of the FMP, including decision-making processes regarding major capital investment, deferred maintenance, divestment of facilities, campus-building and landscape initiatives, and coordination with other initiatives, CALS must continue to be guided by the planning principles that informed the development of the FMP.

This chapter provides a road map for the renewal of CALS' facilities, including an overview of all major capital projects and detailed implementation tools to address capital investment and divestment.

The baseline data and assumptions upon which this plan is based reflect a certain period in time. It is impossible to accurately predict all future academic priorities and trends nor is it possible to understand future economic conditions. Given this uncertainty, capital planning decision-making processes should continue to revisit the inputs to this plan, including building condition, space utilization, growth assumptions and other relevant factors that may have an impact on space need. Doing this will ensure the plan remains relevant for the College and continues to accurately provide direction for the renewal and growth of CALS' facilities.

### Deferred Maintenance

The building condition assessment identified \$173 million in deferred maintenance need. To ensure high quality facilities for all of CALS' activities, a significant allocation of resources must be applied to address both current deferred maintenance and the continued attrition of all facilities. However, budget allocation for deferred maintenance has been minimized through two means:

- **Strategic divestment:** By shifting funds away from poor quality and underutilized resources, this plan reduces deferred maintenance needs by nearly \$50 million.
- **Facility renewal:** For select major academic buildings, deferred maintenance budget can be reallocated toward major building renewal projects. While this

does not reduce the need for facility investment, such as reallocation provides new funding mechanisms and opportunities for full-scale building renewal instead of piecemeal upgrades.

Table ES.2 summarizes the opportunities for minimizing deferred maintenance budget allocations. However, the numbers do not reflect all factors that contribute to deferred maintenance. Future decision-making should take into account the following factors:

- Not all of CALS' facilities were included in the building condition assessment process.
- All buildings, including new capital projects, are subject to continued wear and will have ongoing and new maintenance needs.
- All deferred maintenance needs have been expressed in 2010 dollars.

Ithaca Campus	
<b>Total deferred maintenance (building condition assessment)</b>	<b>\$148 million<sup>1</sup></b>
Major restoration and renovation projects	\$61.5 million
Demolition and Divestment	\$47.4 million
Remaining Deferred Maintenance	\$39.3 million
NYSAES Geneva	
<b>Total deferred maintenance (building condition assessment)</b>	<b>\$23 million<sup>2</sup></b>
Major restoration and renovation projects	--
Demolition and Divestment	\$1.7 million
Remaining Deferred Maintenance	\$21.7 million

**Table ES.2: Deferred Maintenance, Capital Investment and Strategic Divestment**

#### Notes

*1 Does not include Harford, Freeville and Plantations facilities. Does not include buildings that were not assessed by Stantec, including planned/committed capital projects, such as Warren, Fernow, Rice and Stocking Halls.*

*2 Does not include the Geneva Agricultural Sciences Research Laboratory.*

## FMP Capital Projects Priority List

### Capital Projects

The following major capital projects have been identified for the Ithaca and Geneva campuses:

- Integrative and Translational Sciences Teaching and Research Facility
- Environmental Science Teaching and Research Facility
- Food & Energy Systems Teaching and Research Facility
- Agriculture Sciences Research Laboratory (Geneva)
- Ithaca and Geneva greenhouse renewal and countryside initiatives
- Ithaca and Geneva campus landscape renewal

These projects have been formulated to provide ongoing facility support for academic activities while engaging in continued implementation of capital renewal and new construction. Project cost estimates reflect actual project costs for similar projects on campus and are expressed in today's dollars. Consideration of enabling and related projects should occur in the project planning stages, as should implementation details regarding servicing and site conditions.

Table ES.3 and Figure ES.7 capture major capital projects information and phasing, including committed projects and the new capital projects identified in the FMP. The former have already been included in the Contract College facility planning processes and are in various states of funding approval with SUCF.

The FMP major capital projects should be incorporated into the Contract College Facility Master Plan capital projects lists. Through this process, project details and priorities can be refined in conjunction with university-wide capital planning. Further details regarding capital project implementation, including enabling and concurrent projects, are discussed in Chapter 8.

Discipline Area	Project	Completion Date	Cost Estimate
<b>Confirmed Capital Projects</b>			
Ag. & Food Systems	Stocking Hall	2016	\$100,225,000
Econ. & Com. Vitality	Warren Hall	2015	\$60,000,000
Environmental Sciences	Fernow Hall	2013	\$12,288,000
CALS	2011-12 Programmatic Improvements	2012	\$22,800,000
<b>Designed/Planned Projects (not in Cornell Capital Plan)</b>			
Ag. & Food Systems	Harford Phase 1: Freestall Barns	2012	\$6,000,000
Environmental Sciences	Rice Hall	2014	\$16,124,000
Ag. & Food Systems	Agricultural Science Research Laboratory	2015	\$53,000,000
<b>FMP Capital Projects</b>			
Life Sciences	Integrative & Translational Sciences Facility	2016	\$151,750,000
	Plant Science Building	2019	\$60,059,000
Environmental Sciences	Research Facility	2021	\$103,521,000
Ag. & Food Systems	Harford Phase 2: Facility Renewal	2016	\$6,000,000
	Swine Farm Facility Replacement	2016	\$8,160,000
	Livestock Pavilion	2023	\$9,500,000
	Research Facility	2026	\$81,110,000
	Wing Hall	2026	\$11,465,000
Greenhouses	Morrison Hall	2028	\$49,946,000
	Ithaca Greenhouse Area 2 (Phase 1)	2014	\$5,889,000
	Ithaca Greenhouse Area 1 (Phase 2)*	2019	\$21,494,000
	Geneva Greenhouse Area 1 (Phase 1)*	2015	\$7,613,000
<b>Deferred Maintenance</b>			
Ithaca	Annualized over 20-year planning horizon		\$39,300,000
Geneva	Annualized over 20-year planning horizon		\$21,700,000

**Table ES.3: FMP Capital Projects List**

\* Assumes a distribution of 90% greenhouse space and 10% wet lab space

# FMP Capital Projects Priority Implementation Schedule

FMP Key Moves ■  
 Project Implementation ■

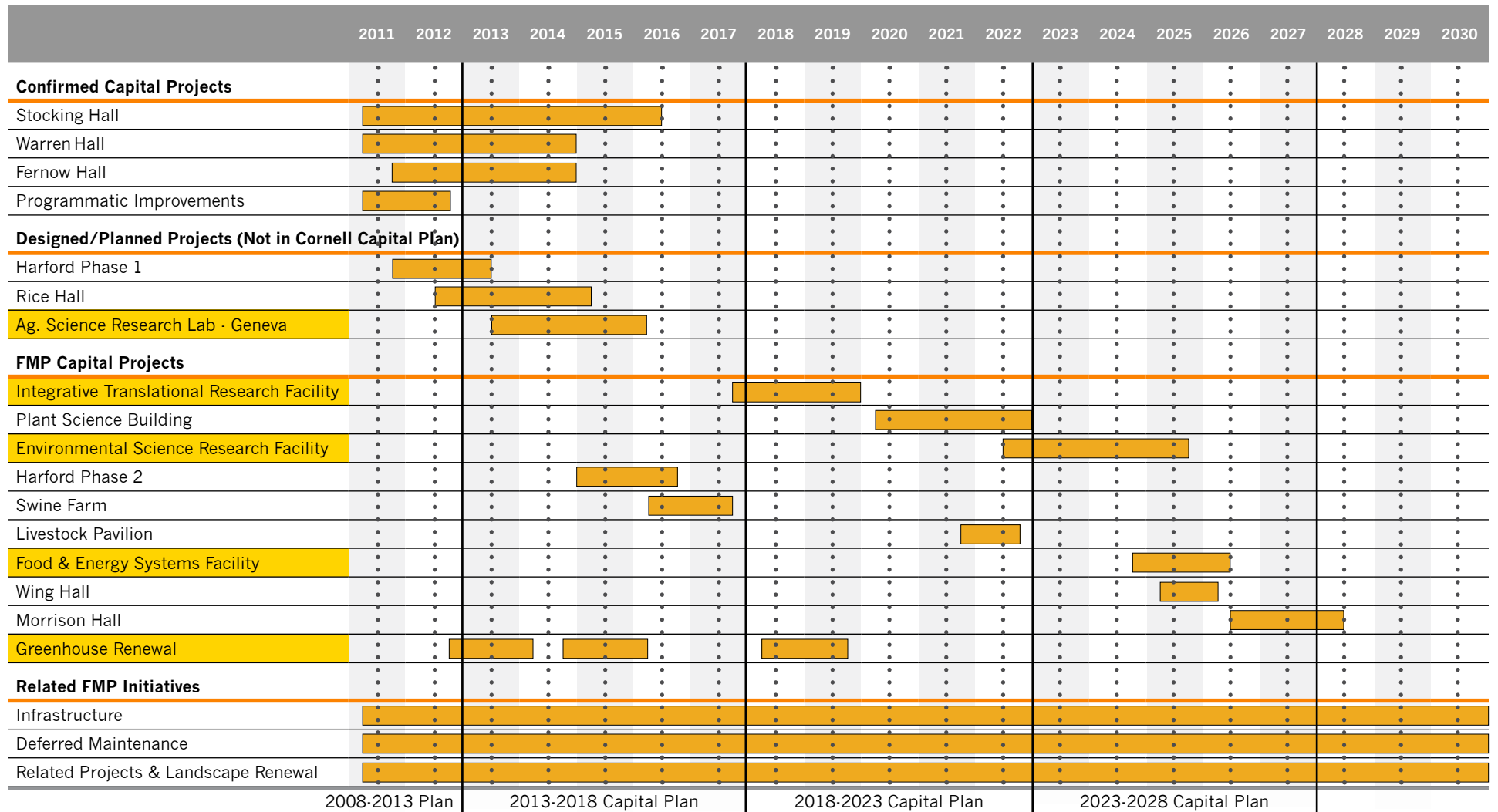


Figure ES.7: FMP Capital Projects Implementation Schedule







# 1 Introduction

This chapter provides an overview of the Facility Master Plan, including the scope of the project, its goals and principles, the planning process and project oversight.

- 
- 1.1 Project Overview and Goals
  - 1.2 Planning Principles
  - 1.3 Project Process

# | 1.1 Project Overview and Goals

## Project Overview

The College of Agriculture and Life Sciences (CALs) has reached a critical juncture. The development and adaptation of CALs' facilities has not kept pace with the needs and expectations of students, faculty and researchers. The College's facilities do not reflect its world class reputation nor the quality expected of an Ivy League institution.

The successful implementation of CALs' academic mission requires a physical environment that effectively supports the key activities of teaching, research and extension. The College has commissioned this comprehensive Facility Master Plan (FMP) to address its space, buildings and land issues. The FMP is intended to enable CALs to achieve its mission, make optimal use of its space and land resources, and plan in a coherent and organized fashion for the next 20 years.

Strengthening CALs is strengthening Cornell. CALs has been integral to Cornell from its inception, providing the physical structure and identity around which Cornell University has grown. As Cornell reimagines its future, CALs is ready to advance its

own mission in partnership with the University and renew its physical setting and facilities.

The completion of the 2008 Cornell Master Plan for the Ithaca Campus (the "campus master plan") established a framework for the growth and evolution of the Ithaca Campus. The broad overall direction contained in the campus master plan set the stage for more detailed planning at the college level. The CALs FMP is guided by the university's campus master plan, which identifies significant change on CALs' facilities and lands. The FMP will help CALs manage future change within the context of the campus master plan.

The development of the FMP included a comprehensive analysis of CALs' facilities at the Ithaca Campus, across Tompkins County, and in and around NYSAES Geneva. The condition of over 280 academic, greenhouse and utility buildings was determined through detailed assessments. Major academic buildings were also subject to a qualitative assessment to determine the appropriateness of building space for its current use. In addition, a land

base assessment was undertaken to ensure fields and field facilities are aligned with CALs academic mission and program.

The results of the FMP assessment streams were striking. CALs faces significant building deficiencies and space quality issues. Approximately 41% of CALs' buildings are in need of significant investment (or divestment), with a pressing need for short-term capital investment to address building condition issues. Space quality and appropriateness issues are similarly pressing. Approximately 37% of major academic space will still be deficient or unfit for its current use after current renovation projects are complete. Greenhouses and other countryside resources face similar quality issues.

Alignment of facilities with CALs' academic activities and within the campus structure will require significant action and investment. In the context of significant change, CALs must be proactive to advance its strategic position within Cornell University and in the SUNY system.

The scale of CALS' deferred facility maintenance is so significant, and the issue so pervasive, that it must remain a priority and cannot be isolated from other important College objectives.

With an effective space plan and implementation framework, the FMP provides a comprehensive strategy for the renewal of CALS' facilities.

Responsive to the current economic environment, the plan efficiently aligns facilities with academic activities while streamlining building investment and operating expenses. The plan also provides an appropriate framework to support and prioritize funding requests to SUNY, Cornell University and other sources to ensure CALS meets future facility needs.

The findings of this FMP will ultimately be integrated into a combined Cornell University Contract College Facility Master Plan (CCFMP), which is currently being prepared by the State University Construction Fund (SUCF). The CCFMP is intended to provide a framework for capital investments and deferred maintenance funding for all four contract colleges. In addition to this process, SUCF is currently preparing facility master plans for all of its campuses across the state. Further detail is provided in Section 1.2.

## Project Goals

The following project goals were identified at the outset of the planning process to ensure appropriate and effective outcomes from the FMP study. Chapter references indicate where each of the goals are achieved in the FMP.

- Goal 1: Establish the extent, use and condition of CALS' existing inventory of buildings and lands (Chapter 3 and 7)**
- Goal 2: Determine the current and future functional space needs of CALS' many users (Chapter 4)**
- Goal 3: Establish the relative priority of CALS' various facility needs (Chapter 8)**
- Goal 4: Match the priority facilities needs to funding opportunities and mechanisms (Chapter 8)**
- Goal 5: Identify utilization strategies and priorities for lands controlled by CALS with a focus on lands used to support academic and research functions (Chapter 7)**
- Goal 6: Identify the ongoing costs to repair and maintain the existing physical inventory (Chapter 8)**
- Goal 7: Integrate needs with Cornell University goals, policies and expectations (throughout)**

## | 1.2 Planning Principles

The planning principles were developed through early dialogue and consultation with CALS and university stakeholders. Together with the project goals, the planning principles provided the overall framework and direction for the FMP. In addition to guiding the FMP process, the principles were used to review and refine the planning scenarios and FMP directions and will continue to serve as a means for evaluating facility planning decisions.

While there is some overlap within the directions established under each principle, the goal was to ensure the principles were broad-based and mutually supportive. More detailed planning objectives are identified in Chapters 5 through 7 to provide targets for academic space, greenhouses and countryside resources. These objectives ensure that the detailed facility planning strategies for all CALS' facilities and lands effectively meet the needs of the College and fully implement the following FMP planning principles.



### **Principle 1:** **Achieve quality, equity and adequacy of facilities**

- Ensure CALS' physical environment reflects Cornell excellence
- Provide adequate space and facilities to departments and units that allow for innovative, effective and efficient operation
- Efficiently provide space and facilities to match user needs
- Implement space management guidelines when and where achievable
- Strengthen state-wide education networks by providing appropriate facilities for enhanced communication



## Principle 2: Prioritize sustainability

- Minimize energy use and emissions
- Support sustainable land management for research, teaching, farming, natural areas and other uses
- Recognize lands as playing an important role in implementing Cornell's Climate Action Plan
- Provide the facilities necessary to meet the campus life needs of students, staff and faculty
- Prioritize maintenance and building renewal to minimize operating costs and maximize the life expectancy of facilities
- Ensure that land, facilities and activities work together to maximize knowledge transfer and positively impact local economies

## Principle 3: Use resources efficiently

- Ensure that facilities support strategic goals and anticipate future needs
- Maximize space utilization and rates of use through a comprehensive space management program
- Ensure increased flexibility in assigning space to effectively meet user needs
- Provide facilities that support interdisciplinary activities
- Streamline and upgrade facilities to best meet CALS' needs and reduce operating costs
- Cluster appropriate countryside uses to ensure efficiency and promote synergies
- Conduct regular and rigorous assessments of utilization to ensure effective needs assessment and prioritization



**Principle 4:**  
**Manage the countryside as defined by the campus master plan**

- Manage the countryside lands for land-based teaching, research and extension, and restrict future campus development and non-rural activities in countryside lands
- Develop policies to guide strategic land transfer, land swaps or disposal
- Recognize that not all lands are required for active teaching and research and may be more appropriate for other rural uses (e.g. naturalization, energy production, carbon sinks, farm services, etc.)



**Principle 5:**  
**Integrate with the campus master plan and university goals**

- Ensure new development supports the directions and initiatives of the campus master plan
- Provide detailed input and direction regarding CALS' lands and facilities to clarify and refine the directions of the campus master plan
- Ensure appropriate integration with new users adjacent to CALS, especially in East Center
- Recognize the need for significant facility renewal and/or replacement in the long term
- Strengthen the character and landscape of CALS to reflect the identity of the College and university
- Identify possible collaborations with other colleges and university units for efficient facilities development



**Principle 6:**  
**Strengthen facility planning and space management practices**

- Align program enhancements and capital project initiatives to ensure comprehensive and transformative capital projects
- Ensure capital projects respond to academic goals and priorities, rooted in a comprehensive assessment of need and building condition
- Adopt space planning and allocation processes that are managed and implemented by the College
- Ensure space management policies and practices that address allocation practices and focus on effective use of space
- Adopt operational practices that reflect the true cost of space
- Ensure facilities needs assessments balance all aspects of the College's mission including teaching, research and extension

**Principle 7:**  
**Reinforce CALS presence and home on the Ithaca Campus**

- Ensure the Ag Quad remains the focal point and home for the College
- Achieve increased cohesiveness of CALS main academic buildings and landscapes
- Clarify and consolidate CALS' territory, facilities and land base to support long-term planning

# 1.3 Project Process

## Oversight and Consultant Team






To ensure that this FMP articulates CALS' long-term vision while supporting the broader Cornell mission, a diverse campus constituency was engaged through four oversight committees:

- **The Working Committee** was the primary oversight body for the Plan, reviewing and critically assessing work as it emerged.
- **The Executive Committee** was the senior decision making group within the Working Committee.
- **The CALS College Facilities and Planning Committee** ensured that the Plan was fully integrated with other university initiatives and especially Cornell's campus master plan.
- **The CALS Advisory Committee FMP Subcommittee** represented a broad constituency of CALS alumni and other stakeholders and provided strategic input at key points in the FMP process.

A complete list of all those involved in the FMP process can be found in Appendix A1.

The FMP consultant team was comprised of three firms:

- **Urban Strategies Inc.** oversaw all components of the work and focused on the land analysis and planning scenarios. Urban Strategies recently led the development of the campus master plan for Cornell.
- **Educational Consulting Services** was responsible for the space utilization analysis and space allocation model, and assisted Urban Strategies with the planning scenarios.
- **Stantec** was responsible for carrying out the comprehensive building condition assessments.

<h3>Project Process</h3>	<h3>Phase: 1 &amp; 2</h3> <p>Phase 1 and 2 involved the preparation of a series of background reports for Ithaca and Geneva campuses. These reports detailed an extensive assessment of building conditions, space programming and space quality, and land-based facilities. A summary of the outcomes from this work was presented at the Ithaca and Geneva open houses in April 2010.</p>	<h3>Phase: 3</h3> <p>In Phase 3, planning scenarios were developed to test alternative facility planning directions as a means to best align CALS' facility resources with its academic mission.</p>	<h3>Phase: 4</h3> <p>Following identification of the preferred planning scenario, a draft master plan was prepared for review and refinement.</p>	<h3>Phase: 5</h3> <p>The final Facility Master Plan was prepared in Phase 5, incorporating input and feedback from a wide group of campus constituents.</p>
				

## FMP Document Outline



With a large and diverse inventory of facilities and land resources, this FMP captures and distills a large amount of information into a meaningful plan. The following outline provides a means of understanding and navigating this document.



### Chapter 2

**CALS' Evolution** outlines the FMP vision, established as an evolution of CALS' history and academic mission and in the planning context of current CALS' and university initiatives.



### Chapter 3

**Facility Assessment** includes the processes and outcomes of the building and space assessment streams carried out as part of the background analysis. The third stream of assessment, which examined CALS' landholdings, is captured in Chapter 7, Countryside Resources.



### Chapter 4

**Space Requirement** explains the process of developing space programmatic requirements and identifies the space needs accommodated in the FMP.



### Chapter 5

**Facility Planning Framework** introduces the discipline areas and provides the detailed academic space plans for all of the academic and administrative departments.



### Chapter 6

**Greenhouse Renewal** provides direction for the complete renewal of CALS' greenhouse stock in Ithaca and Geneva.



### Chapter 7

**Countryside Resources** provides an overview of the countryside assessment process and outlines planning directions for countryside lands and facilities.



### Chapter 8

**Strategy for Renewal** outlines the strategy for implementing the FMP, including detailed direction regarding implementation of major capital projects.





# 2 CALS' Evolution

This chapter outlines the Facility Master Plan Vision, established as an evolution of CALS' history and academic mission and in the planning context of current CALS' and university initiatives.

- 
- 2.1 CALS' Past: History & Mission
  - 2.2 CALS' Present: Current Initiatives
  - 2.3 CALS' Future: Facility Master Plan Vision

## 2.1 CALS' Past: History & Mission

### CALS' History

Cornell was founded in 1865 as New York State's land grant institution, marking the beginning of Cornell's commitment to state-wide research, teaching and extension. One of the founding principles was to teach agriculture arts.

With the intent of improving farming practices, CALS was founded in 1874 as the Department of Agriculture. CALS' support for industry quickly led to the establishment of the extension program and agricultural research stations in the 1880's and 1890's, better connecting teaching and research to farming. At the turn of the century, the New York State College of Agriculture was established, formalizing CALS' role as a state-funded college under the administrative control of Cornell University.

CALS has always had a prominent presence on Cornell's Ithaca Campus. Originally located on the Arts Quad, CALS' home quickly moved to Stone Hall and the original Roberts Hall at the turn of the century. Soon after, the "Agriculture Campus" was established east of Garden Avenue and north of the Commons (now Alumni Field). This was a catalyst for significant growth, seeing the construction of Bailey Hall, CCC (the original Comstock Hall), Caldwell Hall, Fernow Hall, Rice Hall, Wing Hall and the Livestock Pavilion in the 1910's. Stocking Hall, Warren Hall,

Plant Science, and the Teaching and Research Barn followed in the 1920's and 1930's, extending CALS' built footprint from Bailey Hall to the current location of Veterinary Medicine.

CALS' landholdings were also broad. Fields and research plots surrounding the core campus date back for over 100 years. Post-war land acquisitions expanded CALS' presence across Tompkins County, where CALS and Cornell University have become one of the largest landholders. CALS' land-based resources extend across New York State and into neighboring areas, such as the Shoals Marine Lab on Appledore Island, Maine.

As the sixth oldest institution of its kind in the country, the New York State Agricultural Experiment Station (NYSAES Geneva) was established in Geneva in 1880. Originally run by the State, NYSAES Geneva became part of Cornell University in 1923. Since then, it has been the center for research in New York on the production, protection, and utilization of fruit and vegetable crops, an industry that is today valued in excess of \$2 billion. Its counterpart and partner on the Ithaca Campus, the Cornell University Agricultural Experiment Station (CUAES), has also been in operation for over 130 years.



**Dairy and Animal Husbandry Buildings (Stocking and Wing Halls)**



**Poultry Building (Rice Hall)**



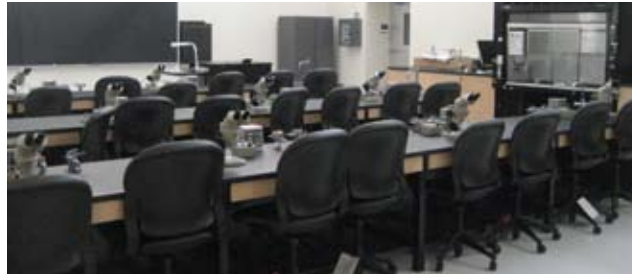
**Forestry Building (Fernow Hall)**



**Historic Roberts Hall**



CALS is one of the largest colleges at Cornell with a long history on the Ag Quad. The College's facilities and lands define the structure and framework of the Ithaca Campus (photo: 1933).



CALS has a broad range of facility types located across New York State and beyond

## CALS' Mission

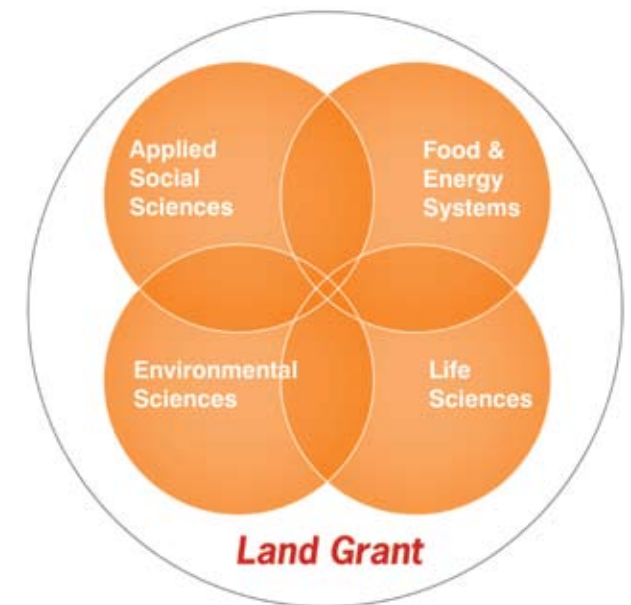
The College of Agriculture and Life Sciences strives to be the preeminent Land Grant institution.

Through its educational, research and extension programs, the College develops the knowledge, technology and human capacity to address the most challenging issues facing society relating to the environment, food and energy systems, and community and economic development. CALS achieves this by pursuing the following mission elements:

- Providing a world-class education for our students and supporting life-long learning;
- Advancing productive and sustainable food and fiber systems that support safe and secure food needs and contribute to sustainable energy supplies;
- Understanding the unity and diversity of life and promoting wise stewardship of the environment and natural resources; and
- Fostering economic vitality and facilitating individual community health and well-being.

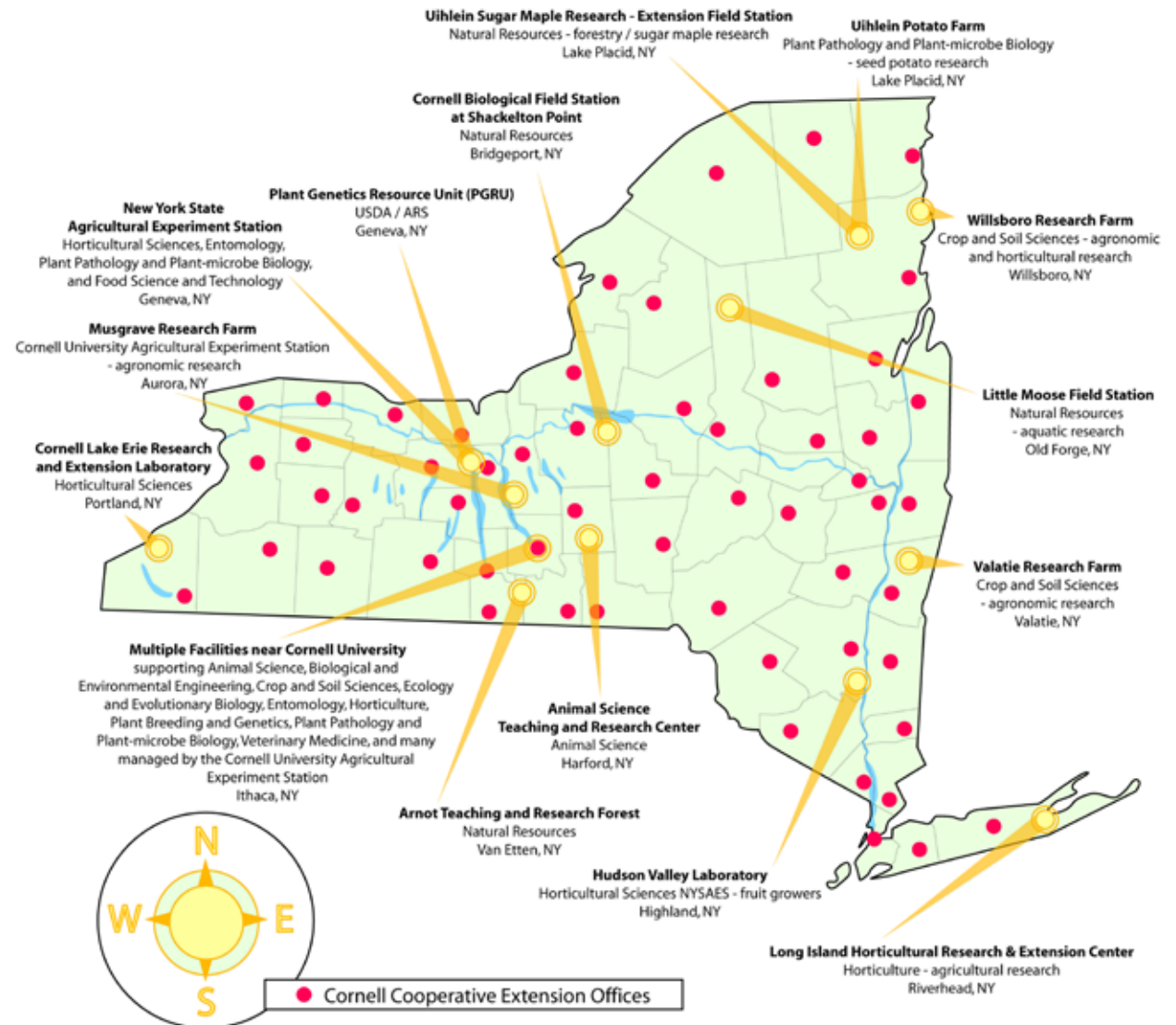
In order for CALS to best make use of its strategic advantage in developing solutions to pressing societal issues (such as sustainable and secure food and energy, climate change and biodiversity loss) it is essential to recognize that the basis for, and solution to, these challenges lies in the characteristics and dynamics of coupled human and natural systems. The coupling of human and natural systems requires that issues confronting these systems be addressed in a holistic manner. Research must occur in an interdisciplinary and multidimensional fashion and the public and policy makers must be engaged. The integration of biological and social sciences within the context of the Land Grant philosophy is essential for CALS to provide the basis for, and solutions to, these critical problems.

As a Land Grant institution, CALS generates new knowledge and applies it to real-life problems. Knowledge transfer occurs through Cooperative Extension and other outreach mechanisms, with curricula that blend liberal and practical education accessible to students, enabling them to develop their civic responsibility and preparing them for leadership.



Cornell Cooperative Extension is a key outreach system of Cornell University, enabling people to improve their lives and communities through partnerships that put experience and research knowledge to work. This mission grows out of Cornell Cooperative Extension's federal and state legislated mandates to connect Cornell research to the citizens of New York State. Cornell Cooperative Extension puts land-grant on the ground by connecting the research-based knowledge of Cornell to individuals, families, businesses and communities.

Cornell Cooperative Extension operates on the Cornell campus through the leadership of faculty and staff in departments in the College of Agriculture and Life Sciences and the College of Human Ecology, with contributions from the College of Veterinary Medicine. Mission-driven Extension activities are inseparable from the instruction and research components of the missions of the Contract Colleges. Extension educators across New York State made nearly 1 million direct contacts to residents and more than 10 million indirect contacts through mass media and exhibits.



Cornell Cooperative Extension offices extend throughout New York State



The Ithaca Campus



The NYSAES Geneva Campus

## | 2.2 CALS' Present: Current Initiatives

Facility planning must be continually responsive to what is happening in the moment while also having a careful eye to the future. The planning process was coordinated with a variety of recent and/or ongoing initiatives, including major initiatives that extend beyond the borders of the College to include the larger Cornell campus.

While the FMP was being prepared, a variety of capital and planning initiatives are currently underway or being considered by CALS, including:

- Renovation of Stocking, Fernow and Warren Halls;
- Design of the Agricultural Research Lab;
- Farm facility consolidation; and
- Major upgrades, including the Riley Robb electrical system and the growth chamber energy savings project.

The FMP planning process considered these and other university-wide initiatives (e.g. infrastructure and landscape investments) to maximize opportunities and reflect changing conditions. For space planning purposes, all major capital projects currently approved or under construction were treated as if complete.



**Architect's rendering of the planned Stocking Hall/Food Science redevelopment project**



**Architect's rendering of the planned renovation of the Agricultural Sciences Research Lab**



Campus master plan perspective of the Ag Quad and East Campus

## Reimagining Cornell

In order to position CALS for strategic growth, the CALS Academic Task Force has developed a restructuring plan for the College in coordination with the Provost's Reimagining Cornell initiative. This initiative recognizes that decisions regarding facilities and the physical environment involve the complex interplay of multiple factors. These interests must be recognized and addressed in order to effectively steward the university's physical resources. Decisions should be framed by and be consistent with Cornell University's commitments to sustainability.

Excerpts of key components of the actions outlined in this strategic objective include, among others:

- Environmental sustainability
- Effective financial planning for ongoing facilities operations and maintenance
- Optimal use of existing space
- Optimal use of open building sites and adherence to the Cornell Master Plan guidelines
- Ensuring proactive and long-term planning efforts inform decision making.

## SUCF Facility Master Plan

A facility master plan for all four of the Contract Colleges at Cornell has recently commenced under the direction of SUCF and Cornell University's Contract Colleges Facilities unit. This process will integrate ongoing or recently completed planning initiatives for all of the Colleges, including the CALS FMP. The SUCF process will be used to form a more unified and strategic capital investment strategy across the Contract Colleges.

Building on the foundation of the CALS FMP, the SUCF Facility Master Plan will provide criteria and guidelines for campus improvements and facilities development that supports the College's academic mission and strategic vision. The SUCF Facility Master Plan will identify opportunities to enhance, maintain or improve the built environment in a way that facilitates learning and student development throughout the facilities of the four Contract Colleges.

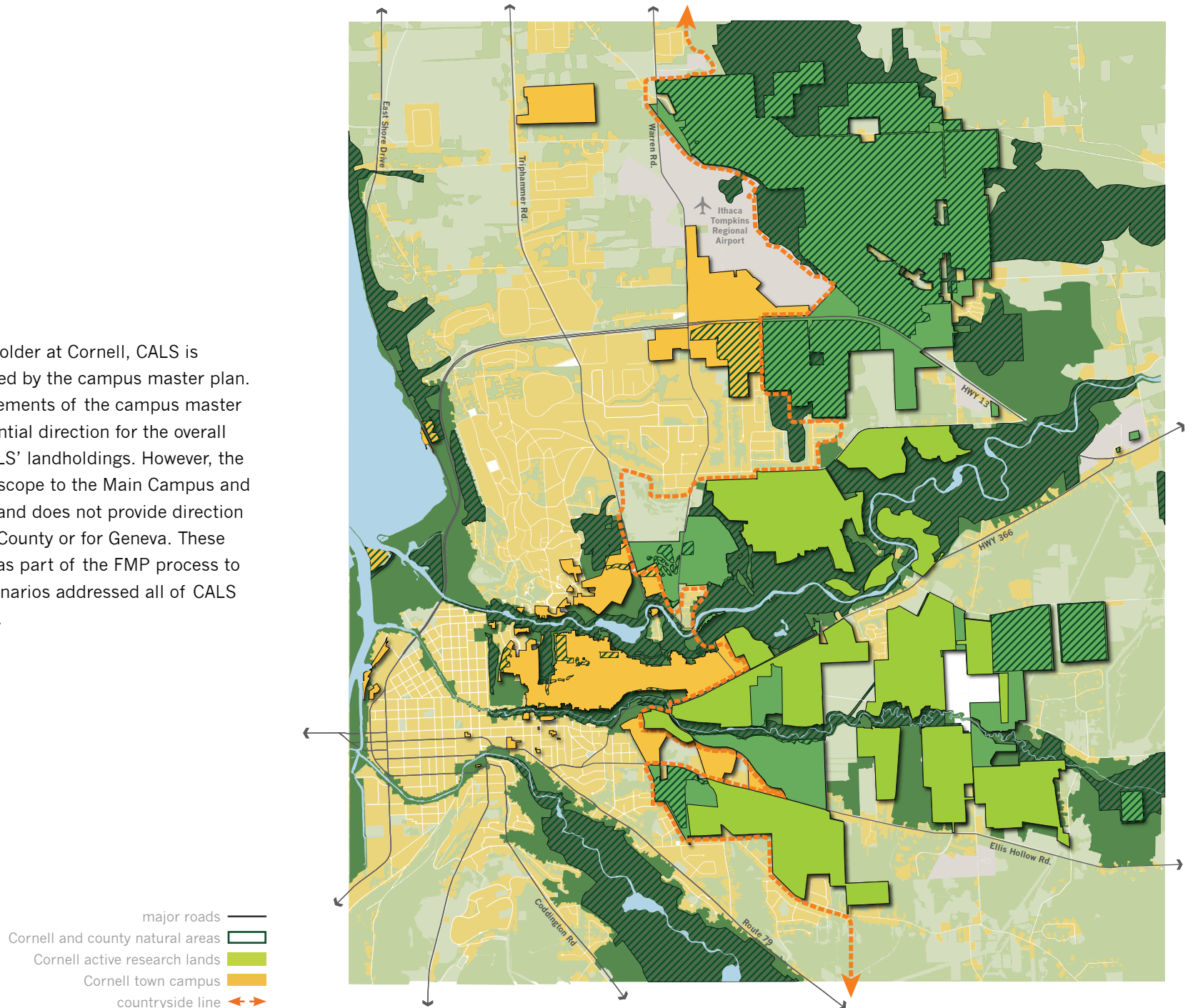
## Cornell Campus Master Plan

In 2005, with new development on the campus increasingly constrained, Cornell determined it needed a vision and strategy for the best use of the university's lands, within and beyond the current academic core. Adopted by the Board of Trustees in 2008, the campus master plan provides the university with an integrated framework to guide its physical development over a 30-60 year time frame.

Within the Core Campus, many areas identified for building renewal and growth are areas currently occupied by CALS buildings. In the countryside, the campus master plan provides direction for the protection and enhancement of CALS' landholdings and resources.

Many of the teaching and research lands close in to the academic campus are protected from growth, including the Orchards and research plots east of the College of Veterinary Medicine building. The plan proposes a comprehensive program of land management and regional stewardship and recommends consolidation of farm services and other rural resources.

As the largest landholder at Cornell, CALS is significantly impacted by the campus master plan. The land-focused elements of the campus master plan provide substantial direction for the overall management of CALS' landholdings. However, the plan was limited in scope to the Main Campus and surrounding areas, and does not provide direction for all of Tompkins County or for Geneva. These areas were studied as part of the FMP process to ensure planning scenarios addressed all of CALS land considerations.



**Figure 1.2: The campus master plan outlined an approach to countryside protection and renewal, and established a countryside line as a physical boundary for campus expansion.**

## 2.3 CALS' Future: Facility Master Plan Vision

The agriculture program at Cornell University has evolved into a complex and multi-disciplinary College that includes the life sciences, economic and community vitality, environmental sciences, and food and energy systems. This unique structure and the relationships nurtured within and between these disciplines have positioned CALS at the forefront of research – exploring some of the most pressing issues facing our world today and into the future. This multidisciplinary structure distinguishes CALS from other colleges and distinguishes Cornell University amongst its peers.

The College plays a fundamental role in supporting translational sciences and research, both within the College and through critical relationships with the Colleges of Human Ecology, Engineering, and Veterinary Medicine. This role is further exemplified in cross-college instruction, as CALS teaches across numerous colleges.

CALS has been integral to Cornell University from its inception, providing the physical structure and identity with such places as the Ag Quad and Tower Road, around which Cornell has grown. As

the University continues to evolve, CALS is ready to advance its own mission in partnership with the University and renew its physical setting and facilities at the heart of the University.

The FMP Vision illustrates the potential physical outcomes of recommended planning policy in 20 years' time. It reinforces patterns of cross-disciplinary work, building upon existing physical and functional relationships. These relationships are anchored across the campus within distinct clusters. Biology and life science related work is clustered around Weill Hall and surrounding biology laboratory buildings; economic and community vitality remain connected to programs within Warren Hall; environmental sciences are connected to Rice, Fernow and Bradfield Halls; and food and energy systems maintain their critical relationships to adjacent greenhouses and the renewed Stocking Hall. At the center of these relationships are the Mann Library and the Ag Quad, the physical and psychological home of the College.

This plan will guide the renewal of over two million square feet of facilities and thousands of acres

of fields and environmental areas over the next 20 years. It will ensure CALS has the best quality facilities and in the right locations to maintain CALS and Cornell as leaders amongst their peers. To this end, it puts forward a coordinated strategy for the divestment/demolition of some facilities; the major renovation and renewal of other facilities, including the Plant Sciences Building; and the creation of new, efficient and state of the art research and lab spaces where they are required. All of this was coordinated within the framework of the campus master plan and other ongoing planning initiatives.

The FMP Vision is based upon the “Key Moves” identified on page 22.



**The Ag Quad is CALS' home at Cornell**



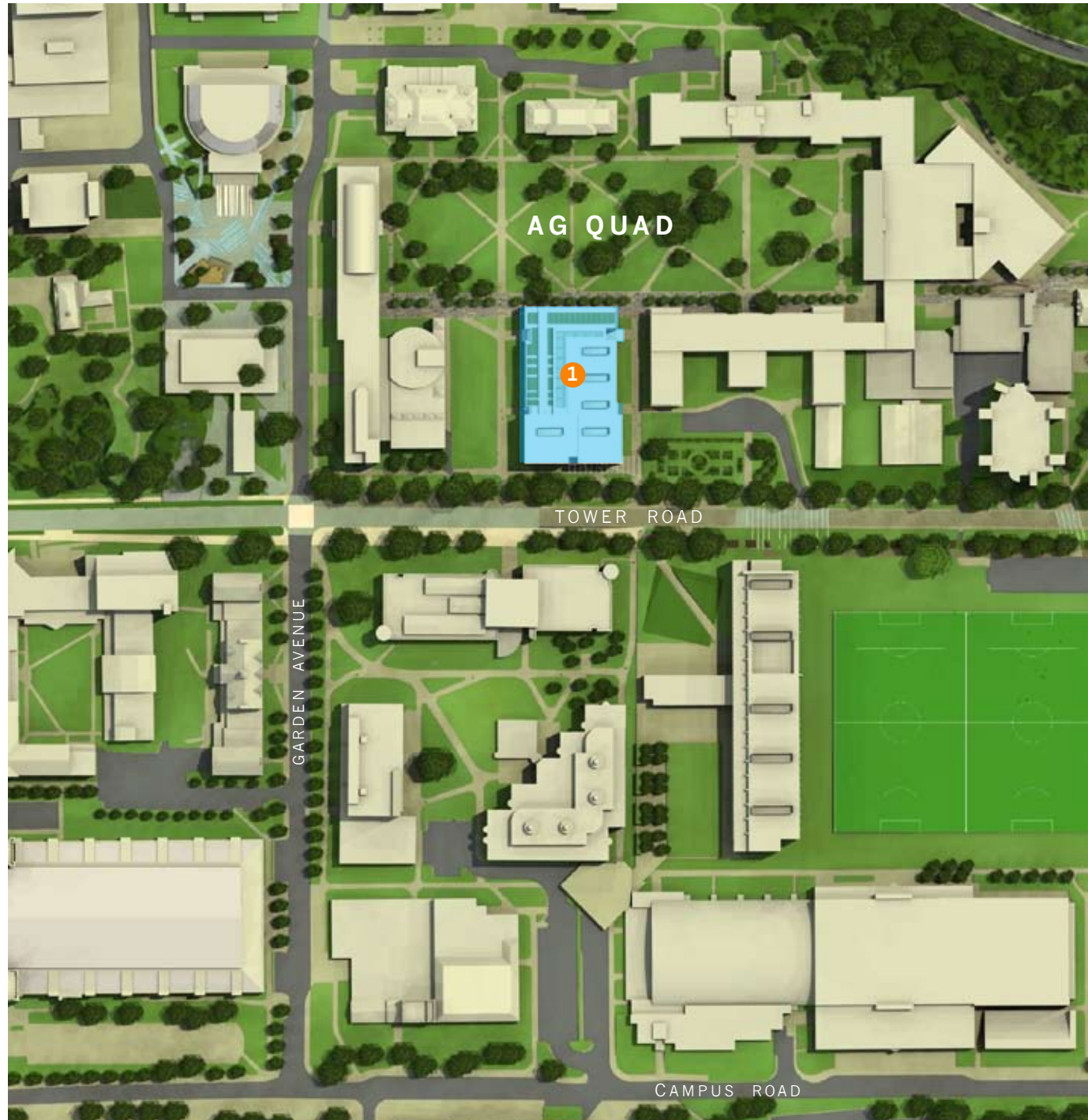
Image of the Ithaca Campus in 20 years, looking northeast from over East Avenue.

## Key Moves

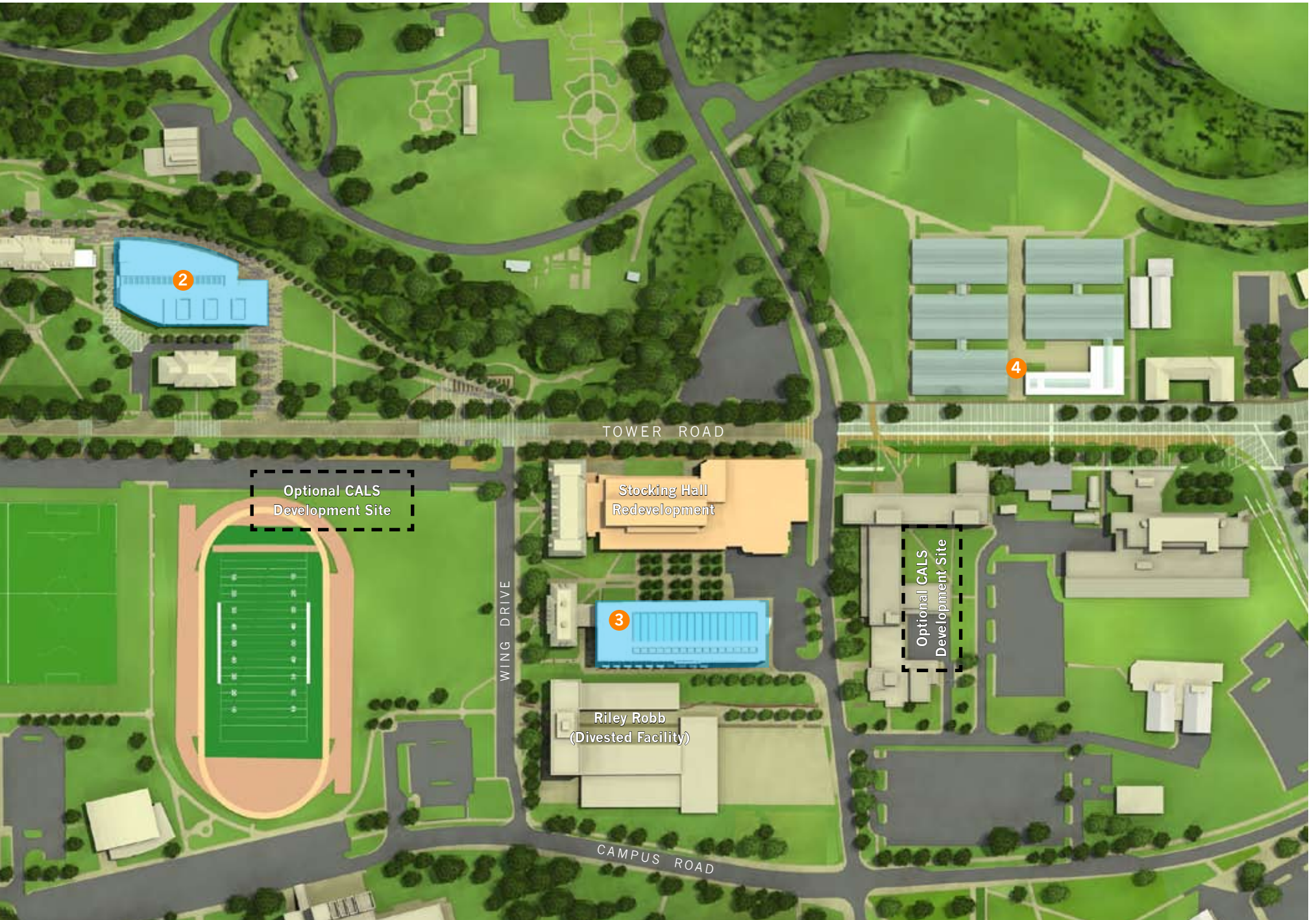
• Four new capital initiatives:

- 1 Renovation of the Plant Science Building with an adjacent addition to promote Integrative and Translational Sciences.**
- 2 New Environmental Sciences facilities adjacent to Rice Hall.**
- 3 Renewal of facilities and new construction for Agricultural Sciences.**
- 4 Greenhouses renewal on Tower Road and the Guterman Complex.**

- Renovation of the Agricultural Sciences Research Laboratory remains a priority at NYSAES Geneva.
- The renovation and re-purposing of CCC and Caldwell Hall for CALS use.
- The future divestment of several buildings on the Ithaca Campus, including Riley-Robb Hall and potentially Wing Hall-Wing and portions of Morrison Hall.
- Strategic renewal of the Teaching and Research Center Harford.
- Relocation of the Livestock Pavilion and Large Animal Research and Teaching Unit to the new Large Animal Teaching Complex.



Plan of the Ithaca Campus in 20 years highlighting the four new Core Campus capital initiatives.



CALS' pattern of physical development and place-making has resulted in some of the best loved places at Cornell University. CALS has been the steward of this legacy, maintaining and enhancing these settings and buildings as a fundamental part of the Cornell Experience.

In addition to supporting the renewal of CALS' facilities and a series of major capital projects, the FMP vision achieves the following:

**Critical adjacencies within CALS and Cornell University are strengthened.**

- The distribution of academic facilities, greenhouses, and fields provides both the right proximity and the appropriate settings for CALS functions, without limiting expansion and renewal opportunities for other Colleges.
- The proximity between renewed teaching greenhouses on Tower Road and other instructional space around Wing Drive and the Ag Quad preserves time sensitive windows of access within scheduled class times.
- Critical adjacencies are maintained with Biology and the Sciences, the College of Human Ecology, and other Colleges.
- Mann Library, an anchor for numerous activities, remains centrally located within the College.
- The College's central location within Cornell continues to support undergraduate teaching across the University.

- CALS potential role in realizing the "East Center" development vision proposed in the campus master plan is articulated.
- Large animal facilities are coordinated with the College of Veterinary Medicine initiatives.
- Functions that are not critical to the Core Campus, such as farm services and research greenhouses are relocated further eastward.
- Adjacencies between laboratory spaces and animal/plant growth facilities are supported.

**Current and planned investment is leveraged.**

- Current investment in existing facilities, such as Stocking, Fernow and Warren Halls, is supported and strengthened.
- The renewal of historic buildings, a significant part of CALS legacy, is accomplished through strategic integration with new construction.
- Infrastructure and programmatic connections to Weill Hall continue to be fully utilized.

**Long-term costs are minimized.**

- Incremental change and investment reflects current funding opportunities.
- The need for expansion of University infrastructure, parking, servicing and other access strategies is minimized.
- The significant extent of historic renewal promotes sustainable building practices for the College and Cornell as a whole.

**CALS identity and Cornell's landscapes are reinforced and celebrated.**

- The Ag Quad remains the "heart and home" of CALS.
- Opportunities for the renewal of Tower Road are positioned along with other University landscape initiatives.
- The consolidation of support facilities to an appropriate location strengthens open spaces.
- Development sites behind Warren and Caldwell Halls are not utilized; ensuring the recent investment in the Martha van Rensselaer forecourt landscape is not compromised.

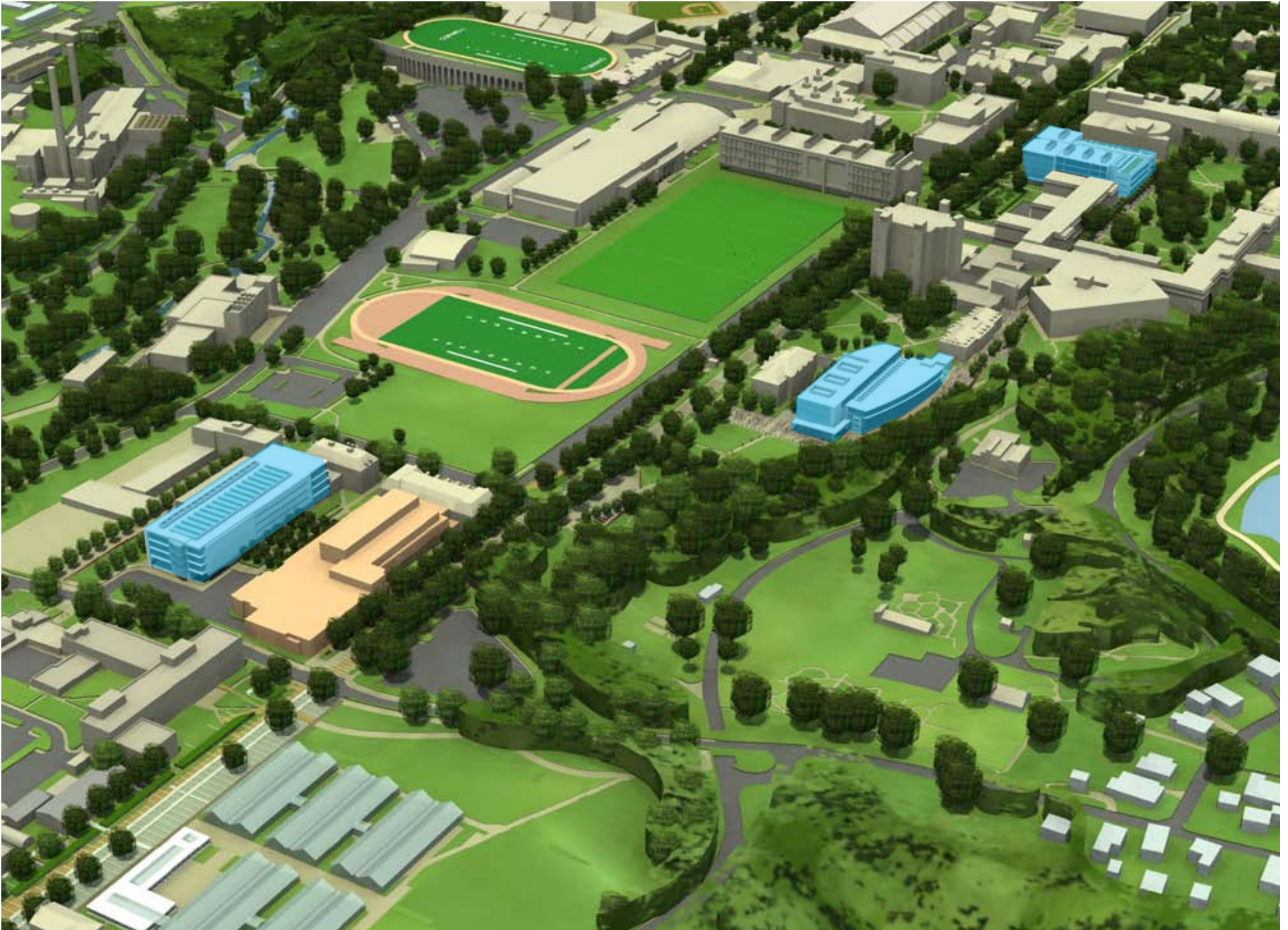


Image of the Ithaca Campus in 20 years, looking southwest from over the Plantations.





# 3 Facility Assessment

This chapter summarizes the two streams of facility assessment that provided a baseline for the planning process: the building condition assessment and the space quality assessment.

- 
- 3.1 Building Condition Assessment
  - 3.2 Space Quality Assessment
  - 3.3 Facility Assessment Synthesis

**Effective facility investment strategies simultaneously address building condition, space allocation and renewal.**

*Right: Plant Science Building*

**CALS maintains a wide range of building types, not all of which are suited to their use.**

*Left: Integrated Pest Management Building*



Facility assessment processes were developed to establish the extent, use and condition of CALS' existing inventory of buildings (see FMP goals - Chapter 1). The facility assessment included two streams of work.

- A comprehensive and detailed **building condition assessment** was carried out for 284 academic, greenhouse and utility buildings in Tompkins County and around NYSAES Geneva.
- A **space quality assessment** was also undertaken for all major academic buildings on the Ithaca and Geneva campuses. This assessment determined the appropriateness of the building space to accommodate the current use.

The building condition assessment documented the existing physical condition, building code compliance, structural adaptability and historic merit of almost 300 CALS buildings. The building condition assessment looked at existing physical conditions of the “base building”, independent from building use or function. A summary matrix of the building condition assessment findings can be found in Appendix A3.

The space quality assessment evaluated the spatial characteristics of the 29 major academic buildings on the Ithaca and Geneva campuses and commented on the appropriateness of plan configurations and spatial qualities relative to existing uses or functions. Approaching the facility assessment in this manner allowed the identification of facilities that may be in good physical condition, but are not suitable for current uses. For example, Wing and Hedrick Halls are both assessed as adequate in building condition terms, but provide inadequate space for most of the uses that they currently accommodate. This nuanced approach also identified facilities that have the capacity to be re-purposed and those that should be divested. Summary tables of the space quality assessment findings can be found in Appendix A4.

In addition to the building condition and space quality assessments, a third stream of assessment looked at CALS' landholdings in and around the Ithaca and Geneva campuses. The findings of this assessment process are incorporated into Chapter 7 – Countryside Resources.

In order to clearly articulate opportunities and issues, the FMP uses consistent terminology. The “building” assessment refers to the physical condition of the base building and its major systems. The “space” assessment refers to the uses and functions within buildings. “Facilities” includes both the building and the space within the building. Supporting data and references for the two streams of facility assessment can be found in the *Building Assessment and Facility Space Planning Reference Guide* (Appendix A2).

	Building Condition Assessment	Space Quality Assessment
Buildings	284	29
Area (sf)	2,934,000	982,000
Location	Ithaca/Tompkins County/Geneva/Hudson Valley	Ithaca and Geneva core campus
Building Types	Academic (53) Greenhouse (59) Utility (172)	Academic (29)
Special Cases	Fernow, Stocking and Warren excluded due to imminent capital project inception	Fernow, Stocking and Warren included in current condition.

# | 3.1 Building Condition Assessment

## 3.1.1 Process Overview

CALS building stock is in a constant state of change. With an inventory of hundreds of buildings, major capital initiatives and minor renovation and rehabilitation occur on an ongoing basis.

The primary purpose of the building condition assessment work was to ascertain current facility conditions. This represented an important input into the FMP, where the conditions assessment was used in determining future renovation needs, opportunities for repurposing and potential for decommissioning. The assessments assisted in determining where change should or should not occur regarding CALS building stock. The drivers for this change include the need for continued maintenance of existing facilities as well as the need to ensure facilities are up to code and meet energy, safety and accessibility standards. Other key considerations include the potential for facilities to be remodeled or retrofitted to accommodate new users and the architectural and historic merit of the buildings.

In addition to providing input to the FMP, a secondary outcome and significant opportunity of this work is the consolidation and management

of a substantive amount of data regarding CALS building stock, which will support ongoing facility management.

The building inspections were performed by a team of architects and engineers to produce an accurate analysis (through non-invasive, non-destructive means) of visible and discernable conditions of the components and elements identified in the report templates. In addition to inventorying typical locations, interviews with building managers provided additional direction and input.

Three key tools were developed as part of the building condition assessment work, each of which was useful to CALS in both developing the FMP and in ongoing building management.

### 1. Building Condition Assessment Database

The building condition assessment database contains all of the collected building condition assessment data. The database links a series of spreadsheets, tables and data sources that can be manipulated to produce customized reports to meet the needs of the user. The database is owned and managed by the office of the CALS Facilities

Director. To maximize its long-term effectiveness, a regular program of review and update should be developed to ensure the relevancy of data.

### 2. Building Condition Assessment Reports

The building condition assessment reports are a customized reporting template developed for the FMP. Three types of reports were developed to respond to three major building types: academic buildings, greenhouses and utility buildings. The reports contain all of the data collected and stored in the building condition assessment database.

### 3. Building Condition Assessment Summary Matrix

The building condition assessment summary matrix captures selected data and assessment criteria from each of the building condition assessment reports to provide a summary building “snapshot”. Data in the summary matrix can be manipulated to highlight certain conditions or factors and to broadly sort buildings based on the results. The summary matrix is intended to provide high level insight into the overall quality of CALS’ facilities and to broadly identify buildings or clusters of buildings that may require investment or divestment. The summary matrix for all assessed facilities can be found in Appendix A3.

### 3.1.2 Building Condition Assessment Outcomes

A total of 284 buildings were assessed in and around the Ithaca and Geneva campuses and the Hudson Valley facilities. Those buildings not assessed include those already assessed as part of capital improvement initiatives (Stocking, Warren, Fernow and Rice), new buildings (e.g. Weill Hall) and very small structures (e.g. pump houses).

Given the large number of buildings and extensive detail contained in the database and building condition assessment reports, the summary matrix was employed to provide high level building condition input into the planning process. In order to broadly categorize all assessed buildings, the summary matrix was sorted based on a number of criteria, including such criteria as physical condition, code compliance, cost of capital investment.



**Some of CALS' facilities should be considered for immediate demolition/removal. Although decommissioning facilities involves short-term cost, long-term savings are possible.**



**Some facilities need reinvestment to ensure long-term use.**



**Some facilities are in good standing and require minimal investment.**

CALS' building stock is in a constant state of change. With an inventory of hundreds of buildings, major capital initiatives and minor renovations and rehabilitation occur on an ongoing basis.



**Mann Library is in good standing**



**Emerson Hall is considered to be an adequate building**



**Riley-Robb Hall is in need of investment or divestment**

The sorting criteria, divided all of CALS' buildings into three categories:

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## 1

### **Buildings in Good Standing**

Those that meet all of the following criteria:

- Good physical condition
- Good compliance with the building code
- Capital investment needs less than \$50/ft<sup>2</sup>

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## 2

### **Adequate buildings**

Those buildings that are in adequate condition are not captured by the criteria for buildings in good standing or in need of investment or divestment

---

## 3

### **Buildings in Need of Investment or Divestment**

Those buildings that meet one of the following criteria:

- Poor physical condition
- Poor code compliance/ building obsolescence
- Required capital investment exceeds \$10,000,000
- Required priority capital investment exceeds \$1,000,000
- Capital investment needs greater than \$100/ft<sup>2</sup>

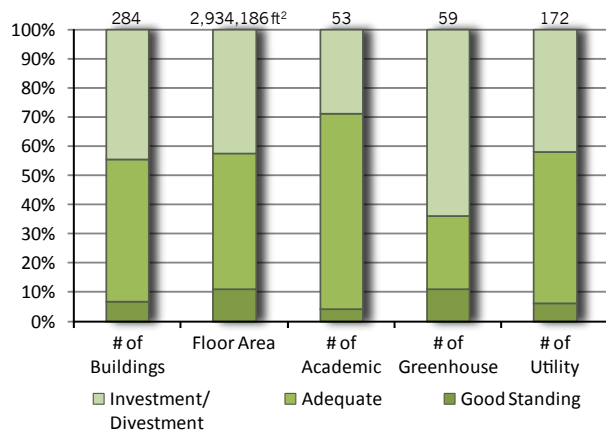
A large number of CALS' buildings have been identified for critical investment or divestment due to poor physical condition, poor compliance and high capital costs.

As indicated in Table 3.1, a large number of CALS' buildings are a priority for investment or divestment due to poor physical condition, poor compliance and high capital costs. With a combined total of over 1.2 million square feet, these buildings have a combined deferred maintenance capital need of over \$150,000,000, of which over \$32,000,000 is high priority capital need that should be addressed by 2015. Addressing these and other capital investment needs are a critical element of the planning process. Further, decisions around divestment of facilities will play an important role in CALS' future.

Building Condition Assessment Summary Category	Number of Buildings	Floor Area (sf)	Required Capital Investment	High Priority Required Capital Investment
Buildings in Good Standing	21	354,608	\$1,826,050	\$282,000
Adequate Buildings	140	1,361,526	\$33,114,160	\$1,935,300
Buildings for Investment or Divestment	123	1,218,052	\$151,458,845	\$32,384,100
<b>Total*</b>	<b>284</b>	<b>2,934,186</b>	<b>\$186,399,055</b>	<b>\$34,601,400</b>

**Table 3.1: Building condition assessment summary matrix outcomes**

\* Stocking, Warren, Fernow and Rice Hall not included in building condition assessment



**Figure 3.1: Building condition assessment outcomes**



The complete Building Condition Assessment Summary Matrix can be found in Appendix A3

## 3.2 Space Quality Assessment

### 3.2.1 Current Space Inventory

To prepare the FMP, space inventory records for College occupied space including academic and administrative departments and service units were organized into a number of broad FMP space categories. The categories used for this study are as follows, and are further defined in Appendix A2.

- Instructional Space
- Research Space
- Office Space
- Resource Collections
- Field Support and Special Facilities
- Animal Quarters
- Other facilities

Inventories of existing space provided the baseline data for identifying the scope of department facilities and to support an assessment of utilization and quality. Space inventory records for the College were categorized in the Cornell University space inventory information database according to a taxonomy that includes these two key descriptors:

- **HEGIS space codes (Higher Education General Information Survey):** HEGIS codes categorize space according to its basic type: classroom space, laboratory teaching space, research laboratory space, office space, etc. For each room type code, there is a corresponding descriptor.
- **Function Codes, Function Name and Function Proration:** Function codes identify the principal use of a facility. Where there are two or more principal uses, the area of the room is pro-rated among multiple functional categories.

These categories of space typically span a broad range of the HEGIS room type codes as well as the Function codes used in the space inventory database. A sample HEGIS code tabulation is included in Appendix A5.

Space Category	Space Type
College Teaching	College shared classroom space <ul style="list-style-type: none"> <li>• Auditoriums</li> <li>• Lecture Halls</li> <li>• General Classrooms</li> <li>• Seminar Rooms</li> </ul>
Academic Department Space	Instructional labs and support space Research space <ul style="list-style-type: none"> <li>• Research labs and support space</li> <li>• Environmental chambers</li> <li>• Coolers or freezers</li> </ul> Academic office space Academic department administrative space Animal quarters Resource collections Other space <ul style="list-style-type: none"> <li>• Social spaces</li> <li>• Shops</li> <li>• Storage and support</li> </ul>
College Administrative Space – Central Units	Administrative offices Meeting rooms Staff lounges College storage facilities
Other Programs	Office space and support for programs such as American Indian Program and International Programs.
Cornell University Agricultural Experiment Station (CUAES)	Service Unit at Ithaca campus <ul style="list-style-type: none"> <li>• Remote field buildings, workshops/vehicle storage, etc.</li> </ul>
New York State Agricultural Experiment Station (NYSAES)	Service Unit at Geneva campus <ul style="list-style-type: none"> <li>• Remote field buildings, workshops/vehicle storage, etc.</li> </ul>
Academic Department Field Support	Department Processing, Utility and Support Facilities
Animal Science Farms	Farm facilities associated with Animal Science Department: <ul style="list-style-type: none"> <li>• Teaching and Research Centre (Harford)</li> <li>• Poultry Farm</li> <li>• Swine Farm</li> </ul>
Academic Special & Field Support	Processing, Utility and Support Facilities
Cornell Plantations	Cornell Plantations facilities
Mann Library	Ithaca campus library
Lee Library	Geneva campus library

**Table 3.2: Space Categories and Types**

Space Inventory Summary	
Space Category	Net Assignable Area (NASF)
<b>Ithaca</b>	
College Teaching	60,777
Academic Department Space	891,788
College Administration Space – Central Units	45,726
Other Programs	15,651
Cornell University Agricultural Experiment Station (CUAES)	253,011
Academic Dept. Field Support	256,760
Animal Science Farms	330,350
Academic Special & Field Support	62,605
Mann Library	146,745
Cornell Plantations	38,962
<i>Ithaca Total</i>	<i>2,102,375</i>
<b>Geneva</b>	
Academic Department Space	118,064
College Administrative Space – Central Units	41,260
New York State Agricultural Experiment Station (NYSAES)	74,594
Academic Special & Field Support	115,313
Lee Library	5,381
<i>Geneva Total</i>	<i>354,612</i>
<b>Total (NASF)</b>	<b>2,456,987</b>

**Table 3.3: Summary of College Space Inventory**

The inventory of space considered within the scope of this FMP included Ithaca Campus facilities, adjacent facilities in Tompkins County, and NYSAES Geneva and surrounding facilities. Further details are provided in the following tables.

Core Academic	
Space Category	Net Assignable Area (NASF)
<b>College Teaching</b>	
Schedule 25 Classroom Space	60,777
<i>Sub-total</i>	<i>60,777</i>
<b>Academic Department Space</b>	
Instructional Laboratories and Support Space	93,372
Research Laboratories and Support Space	420,351
Office Space	296,906
Resource Collections	22,255
Animal Space	11,052
Other Space – Study Space/ Workshops/Department Storage/Social Spaces	47,852
<i>Sub-total</i>	<i>891,788</i>
<b>College Administrative Space – Central Units</b>	
Office Space	29,410
Operations & Facilities	16,316
<i>Sub-total</i>	<i>45,726</i>
<b>Other Programs</b>	
Office Space	12,699
Other Space – Study Space/ Storage/Social Spaces	2,952
<i>Sub-total</i>	<i>15,651</i>
<b>Total (NASF)</b>	<b>1,013,942</b>

**Table 3.4: Ithaca Space Inventory – Core Academic Space**

Note:

Seminar rooms have been categorized as College teaching, academic department or office space depending on their primary use.

College Administrative & Services	
Space Category	Net Assignable Area (NASF)
<b>Cornell University Agricultural Experiment Station (CUAES)</b>	
Greenhouses/Greenhouse Service	167,337
Office Space	1,148
Special & Field Support Space – Workshops/Vehicle & Equipment Storage	84,526
<i>Sub-total</i>	<i>253,011</i>
<b>Academic Department Field Support</b>	
Processing, Utility and Support Facilities*	256,760
<b>Animal Science Farms</b>	
Processing, Utility and Support Facilities*	330,350
<b>Academic Special &amp; Field Support</b>	
Processing, Utility and Support Facilities*	62,605
<b>Total (NASF)</b>	<b>902,726</b>

**Table 3.5: Ithaca Space Inventory – College Administrative and Services Space**

\* Remote field buildings, workshops, equipment/vehicle storage, etc.

# Geneva Space Inventory

Other College Units	
Space Category	Net Assignable Area (NASF)
<b>Mann Library</b>	
Study/Bookstacks	105,713
Instructional Space	4,559
Office Space – Library Administration	26,267
Other Space – Exhibit/Storage	10,206
<i>Sub-total</i>	146,745
<b>Cornell Plantations</b>	
Greenhouses	6,064
Office Space	7,702
Other Space – Workshops/Storage	25,196
<i>Sub-total</i>	38,962
<b>Total (NASF)</b>	<b>185,707</b>

Table 3.6: Ithaca Space Inventory – Other College Units

Core Academic	
Space Category	Net Assignable Area (NASF)
<b>Academic Department Space</b>	
Research Laboratories and Support Space	83,714
Office Space	30,609
Other Space – Exhibits/Workshops/Storage	3,741
<i>Sub-total</i>	118,064
<b>College Administrative Space – Central Units</b>	
Office Space	11,643
Other Space – Assembly/Social Space	5,737
Operations & Facilities	23,880
<i>Sub-total</i>	41,260
<b>Total (NASF)</b>	<b>159,324</b>

Table 3.7: Space Inventory – Core Academic Space (Geneva)

College Administrative & Services	
Space Category	Net Assignable Area (NASF)
<b>New York State Agricultural Experiment Station (NYSAES)</b>	
Greenhouse/Greenhouse Service	55,583
Workshops	19,011
<i>Sub-total</i>	74,594
<b>Academic Special &amp; Field Support</b>	
Processing, Utility and Support Facilities*	115,313
<i>Sub-total</i>	115,313
<b>Total (NASF)</b>	<b>189,907</b>

Table 3.8: Space Inventory – College Administrative and Services Space (Geneva)

\* Remote field buildings, workshops, equipment/vehicle storage, etc.

Other College Units	
Space Category	Net Assignable Area (NASF)
<b>Lee Library</b>	
Library	5,381
<b>Total (NASF)</b>	<b>5,381</b>

Table 3.9: Space Inventory – Other College Units (Geneva)

## 3.2.2 Academic Space Quality Assessment

### Criteria

The qualitative assessment of College space considers the degree of the match between the academic function housed and the suitability of the existing space to accommodate that function. This fit-to-function qualitative assessment\* asks a pair of related questions:

1. Is the basic building plan configuration capable of providing contemporary standards for teaching, research or office environments?
2. Can the existing building be upgraded to meet modern building code and environmental standards for the current use?

Criteria for assessing plan configuration, code compliance and building system suitability for major space categories are as follows.

### Instructional Space

- Structural configuration and dimensions that have the capacity to provide properly proportioned volumes and sight-lines; room sizes that meet classroom station area standards; and rooms that can accommodate

full multimedia capabilities in an appropriate acoustic environment.

- Circulation system of corridors and stairwells that provide sufficient crush and informal gathering space to accommodate large numbers of students arriving and leaving at class change times.

### Wet and Dry Research Laboratories and Support Spaces

- Structural configuration and dimensions that allow for the creation of repeated modular multi-bay laboratory environments with floor dimensions that can accommodate support spaces located in close proximity to the laboratory work areas.
- Clear floor-to-floor dimensions that provide sufficient height to accommodate building mechanical systems that support laboratory environmental requirements.

### Office Space

- Plan configurations that support the creation of single occupancy cellular office spaces and collaborative workstations with natural light.

### Other Space

- Plan configurations that include support spaces such as workshops, break rooms, lounge spaces and storage areas

\* *The fit-to-function assessment was a high-level assessment of existing conditions of CALS major academic space for planning purposes, and considered plan configuration, suitability of building systems and other related factors.*



**Modern facilities are an essential component to the continued achievement of CALS' academic mission. Some facilities are not being utilized efficiently in their current state. Through a program of renewal, these facilities could see significant improvement in use.**

## Ratings

Space in the major academic buildings at Ithaca and Geneva campuses has been rated according to the following categories:

- **Fit for Function**

Building plan configuration and building systems generally suited for the current use (e.g. Comstock, Biotech and Weill Halls\*)

- **Deficient**

Basic configuration and building systems suitable or adaptable for current use with significant investment in improvements (e.g. Bradfield Hall, Barton Laboratory)

- **Unfit for Function**

Investments in renovations would not provide suitable accommodation for the current use (e.g. Plant Science Building teaching labs, Hedrick Hall labs)

\* *Biotech and Weill Hall are partially occupied by CALS users but are Cornell University buildings*

### Teaching Space



### Lab Space



### Greenhouse Space



### 3.2.3 Space Quality Assessment Outcomes – Ithaca

For the major academic buildings on the Ithaca Campus, space assessed as fit comprises less than half the assignable space in the current buildings. Figure 3.3 illustrates the distribution of space by building. Space rated as unfit is evident in the oldest College buildings that currently house laboratory uses (e.g. Plant Science, Stocking Hall and Wing Hall), and there is a concentration of space rated unfit that is used for research purposes. Space quality issues in Stocking, Warren and Fernow Halls will be addressed in a committed major capital projects.

Table 3.9 consolidates the ratings for major space categories to illustrate the overall values for the Ithaca Campus. Figure 3.2 provides a summary of space quality for academic department space, with a further breakdown by major academic building in Figure 3.3. For non-CALS buildings, the space represented in the tables and charts includes only CALS occupied space. Summary tables of the space quality assessment findings can be found in Appendix A4.

Space Category	Fit Area	Deficient Area	Unfit Area	Total Assignable Area
Teaching	60,511	61,566	21,909	143,986
Research	142,131	129,853	110,283	382,267
Office	159,160	136,219	616	295,995
Other	24,875	14,343	4,309	43,526
<b>Total (nasf)</b>	<b>386,677</b>	<b>341,981</b>	<b>137,117</b>	<b>865,775</b>
<b>Total (%)</b>	<b>45%</b>	<b>39%</b>	<b>16%</b>	<b>100%</b>

Space Quality Outcome after Current Capital Investment				
<b>Total (nasf)</b>	<b>549,409</b>	<b>224,473</b>	<b>96,919</b>	<b>870,801</b>
<b>Total (%)</b>	<b>63%</b>	<b>26%</b>	<b>11%</b>	<b>100%</b>

Table 3.10: Summary of academic department space quality (Ithaca Campus)

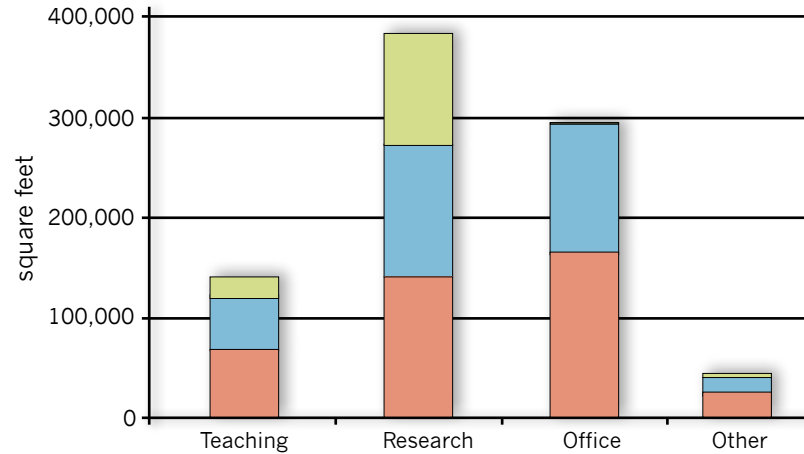


Figure 3.2: Summary of academic department space quality (Ithaca Campus)

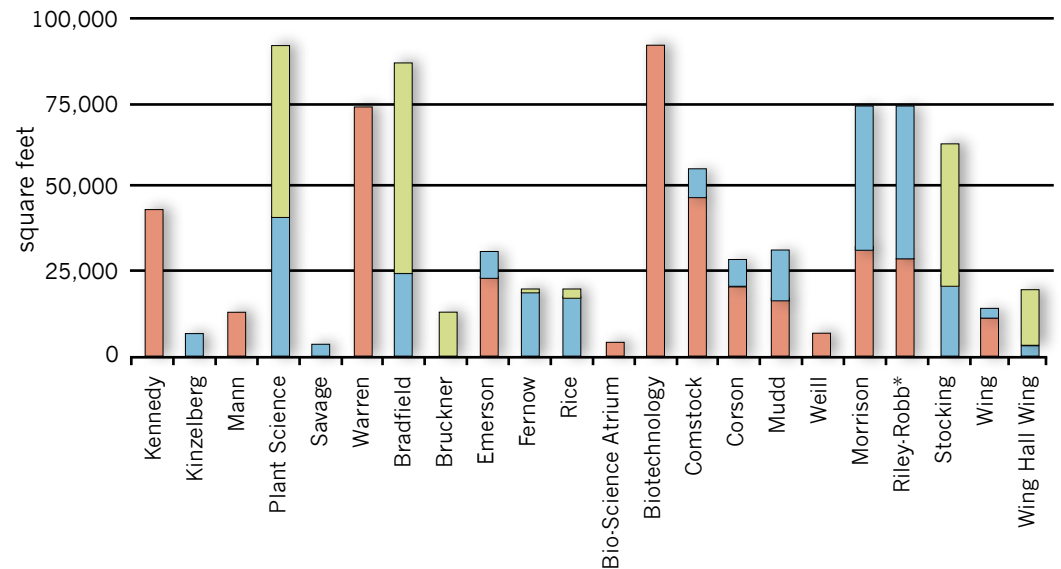


Figure 3.3: Overall space quality by building (Ithaca Campus)

\* Recent renovations to Riley-Robb did not result in state-of-the-art facilities

The following tables and charts indicate the Ithaca Campus fit-to-function ratings for instructional space, research space and office space.

### Instructional Space

Fit Area	Deficient Area	Unfit Area	Total Assignable Area
60,511	61,566	21,909	143,986
42%	43%	15%	100%

Table 3.11: Teaching Space by building (Ithaca Campus)

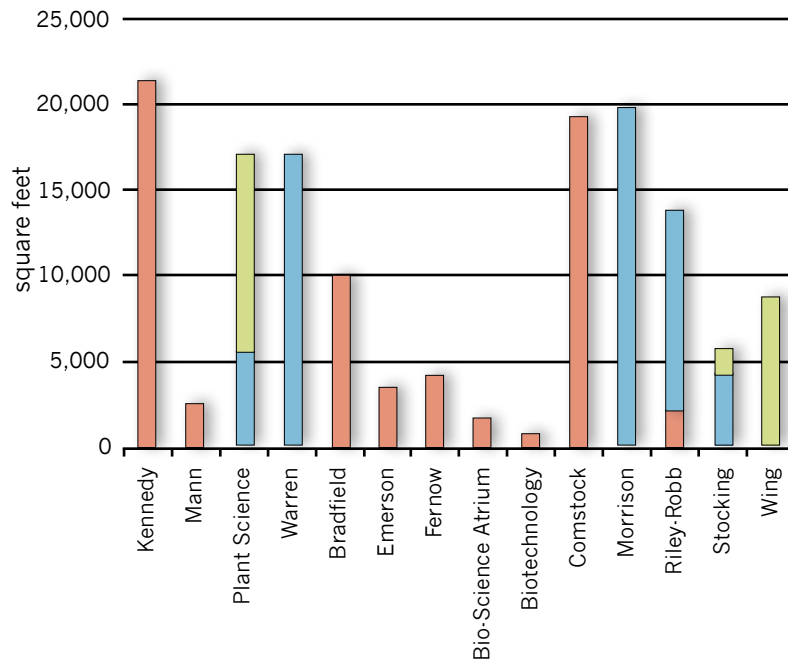


Figure 3.4: Teaching Space by building (Ithaca Campus)

### Research Space

Fit Area	Deficient Area	Unfit Area	Total Assignable Area
142,131	129,853	110,283	382,267
37%	34%	29%	100%

Table 3.12: Research space by building (Ithaca Campus)

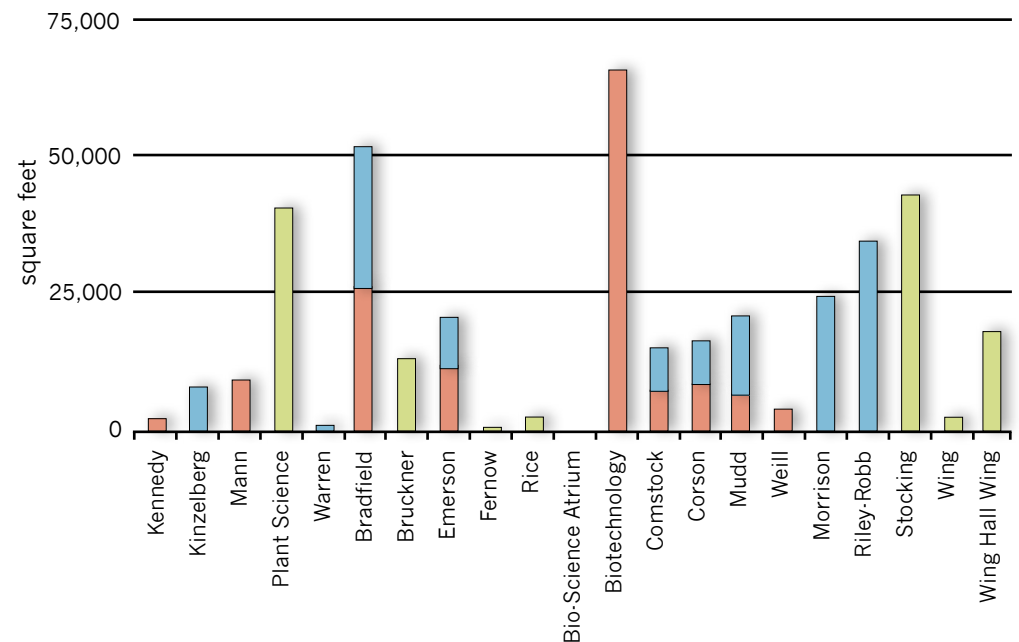


Figure 3.5: Research space by building (Ithaca Campus)

## Office Space

Fit Area	Deficient Area	Unfit Area	Total Assignable Area
159,160	136,219	616	295,995
54%	46%	0%	100%

Table 3.13: Office space by building (Ithaca Campus)

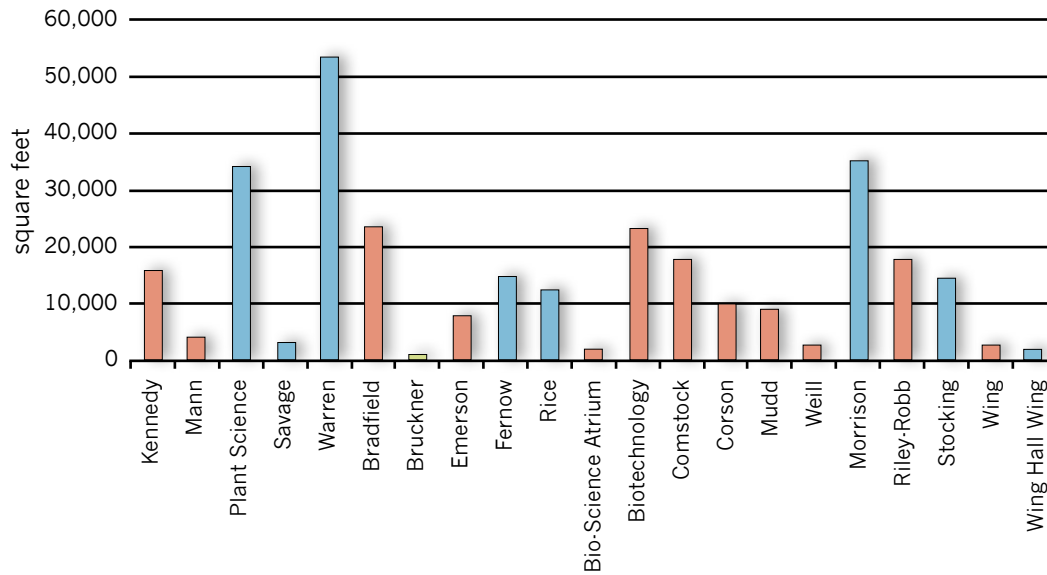


Figure 3.6: Office space by building (Ithaca Campus)

### 3.2.4 Space Quality Assessment Outcomes – Geneva

For the major academic buildings at NYSAES Geneva, space assessed as fit comprises just 14% of the assignable space in the current buildings. Figure 3.8 illustrates the distribution of space by building. Space rated as unfit is evident in the oldest College buildings that currently house laboratory uses, including Hedrick Hall and Sturtevant Hall. Space rated as deficient include mid-century laboratory buildings (Barton Laboratory and Food Research Lab).

Table 3.13 consolidates the ratings for major space categories to illustrate the overall values for NYSAES Geneva. Figure 3.7 provides a summary of space quality for academic department space, with a further breakdown by major academic building in Figure 3.8. Summary tables of the space quality assessment findings can be found in Appendix A4.

Space Category	Fit Area	Deficient Area	Unfit Area	Total Assignable Area
Research	17,866	65,610	18,104	101,580
Office	2,300	22,196	11,590	36,086
Other	0	4,067	0	4,067
<b>Total (nasf)</b>	<b>20,166</b>	<b>91,873</b>	<b>29,694</b>	<b>141,733</b>
<b>%</b>	<b>14%</b>	<b>65%</b>	<b>21%</b>	<b>100%</b>

Table 3.14: Summary of academic department space quality (Geneva Campus)

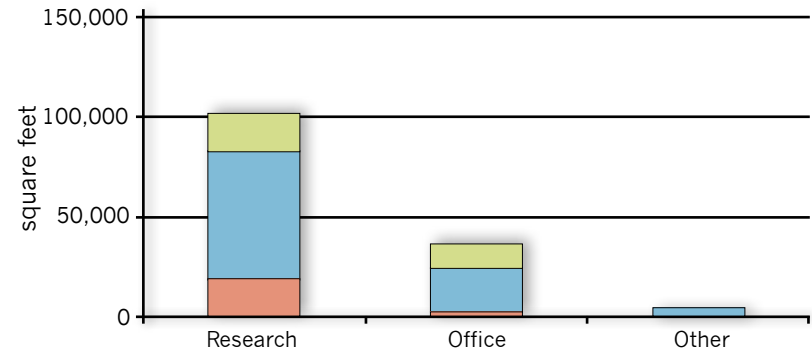


Figure 3.7: Summary of academic department space quality (NYSAES Geneva)

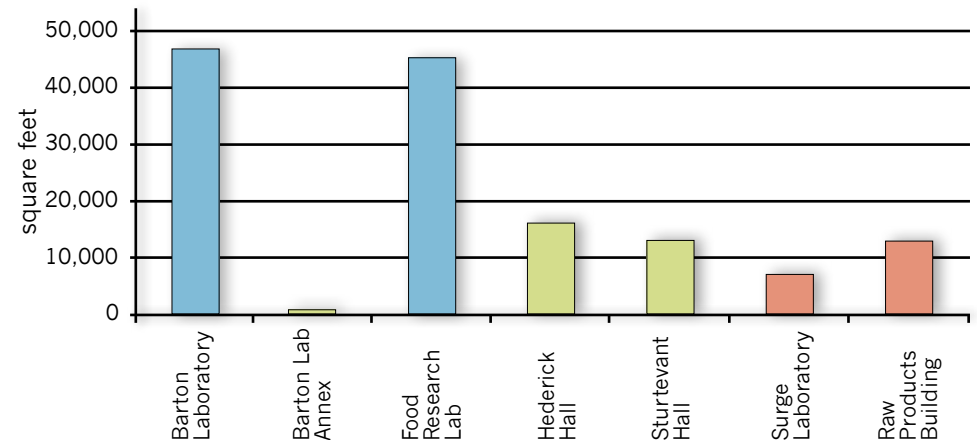


Figure 3.8: Overall space quality by building (NYSAES Geneva)

Effective utilization of laboratory space is limited by building configuration. Floor plate size and configuration in the oldest academic buildings cannot be redeveloped to provide modern laboratory environments.

### 3.2.5 Key Findings

The space analysis of the current conditions yields the following conclusions:

- Oldest academic buildings fall furthest from providing effective working space. Effective use of these buildings is restricted by overall building condition, antiquated building mechanical and electrical systems: outdated laboratory layouts, fittings and furnishings. Ithaca buildings included in this category include: Plant Science, Rice, Wing, and Morrison Halls. NYSAES Geneva buildings include Hedrick and Sturtevant Halls. Aging buildings represent a large proportion of CALS' facilities.
- Effective utilization of laboratory space is limited by building configuration. Floor plate size and configuration in the oldest academic buildings cannot be developed to provide modern laboratory environments. New models for research space cannot be accommodated in existing space – See Hedrick Hall/Weill Hall example in the following illustration.

## Case Study

**Weill Hall (top) compared to Hedrick Hall (bottom)**



**This case study compares modern lab buildings with older buildings that have been retrofitted to accommodate modern laboratory uses. The Weill Hall floor plan exhibits large, flexible wet laboratory space with associated prep areas within internal circulation areas (blue). Dry office uses are separated from wet uses by the primary building corridor (brown). Hedrick Hall exhibits a warren-like distribution of mixed wet and dry uses within small rooms.**

A piecemeal approach to building system and fabric improvements does not adequately address space quality issues and is not cost-effective.

### 3.2.6 Space Efficiency Factors

- Several instances of circulation systems that do not provide adequate escape routes (e.g. Plant Science Building, Hedrick Hall)
- Projects to upgrade building systems and laboratory layouts have provided high quality accommodation in several instances, however, the piecemeal approach to building system and fabric improvements does not address quality issues comprehensively and is likely not cost-effective
- Poor quality of facilities is a key factor in users' perceptions of space shortages. Inefficient layouts for laboratories and offices limit effective utilization of the floor area available.
- More generous space standards in older buildings for some categories of spaces (offices). Academic buildings not aligned with current space allocation standards
- Space allocated to research projects and teams is fractured and discontinuous. Support services are often remotely located from laboratory areas.

This plan provides a set of recommendations for repurposing existing space that is to be retained for more suitable uses. The space requirements for College units have been developed on a location-neutral basis without reference to how efficiently the space allocations recommended for specific activities can be matched to the available assignable space in CALS academic buildings.

Many aspects of existing space affect how well area requirements can be matched to available space: principal aspects include the original plan configuration, building age, structural system and grid dimensions, building mechanical system design, and window placement. To adjust for these conditions requires an efficiency factor be applied to the inventory of existing space to compensate for disparities between optimum room areas and the spaces available for reallocation.

These efficiency factors are applied to the existing space inventory to generate a revised space inventory value, by space category and building. A number of inputs were considered in developing these factors including design studies prepared

for CALS' comprehensive rehabilitation projects, principally the Warren Hall renovation project that is in the planning stages and analyses of the existing allocations for particular space types by HEGIS code – e.g HEGIS Code 310 Faculty Offices – to determine the degree of variation between actual room areas and the recommended standards.

A number of conditions are considered in setting the values:

- For the College's oldest academic buildings which require comprehensive rehabilitation of the existing fabric and replacement of most building systems, the wide scope of the project provides an opportunity to develop design proposals that can provide a high degree of match between the standards and actual design values (e.g. Warren Hall project). While a more comprehensive renovation involving a greater degree of floor plan change will result in higher capital costs, the benefit in achieving a good fit is that less space is required to meet the College's needs. These efficiency factors for the College's oldest buildings assume that the projects will target a close match between requirements and allocations.

- For activities that require cellular types of space, such as offices, achieving a precise match between space standards and actual room areas can be difficult. A planning assumption made in developing these efficiency factors is that room area allocations will achieve averages that nearly match the standard, while individual rooms will exhibit a range of sizes that can be greater or smaller than the standard.
- For activities that rely on extensive building services, a higher factor value is assigned. This includes wet laboratory space or teaching and research. The overall impact of this factor will be mitigated by the strategy of developing new space in a series of laboratory buildings to address a significant portion of the College's requirements for this type of facility, reducing the extent of existing space that needs to be upgraded.

Tables 3.14 and 3.15 outline the efficiency factors by building age and space categories for the Ithaca and Geneva campuses.

Space Efficiency Discount Factors - Ithaca			
Building Age Category	Buildings	Space Categories	Discount Factor
Beaux-Arts	Caldwell Hall	All categories	10%
	Computing & Communications Center		
	Fernow Hall		
	Plant Science Building		
	Rice Hall		
	Warren Hall Wing Hall		
Mid-Century Modern	Morrison Hall	Teaching labs, research labs, prep rooms, etc.	10%
	Riley-Robb Hall	General classrooms	5%
		Office – Offices and office support space Other – Lounges, storage space, etc	
Late 20th Century	Biological Science Atrium	General classrooms	5%
	Biotechnology Building	Teaching labs, research labs, prep rooms, etc.	
	Bradfield Hall	Office – Offices and office support space Resource Collections Food service facilities Other – Lounges, storage space, etc.	0%
	Comstock Hall		
	Dale R. Corson Bio Science Wing		
	Emerson Hall		
	Kennedy Hall		
	Roberts Hall		
Seeley G. Mudd Bio Science Wing			
21st Century	Food Science Lab (as redeveloped)	All categories	0%
	Mann Library (Plant Biology Space)		
	Stocking Hall (as redeveloped)		
	Weill Hall		

**Table 3.15: FMP space efficiency discount factors (Ithaca Campus)**

Discounted College Space Inventory Summary	Net Assignable Area (NASF)	Discounted Net Assignable Area
<b>Space Category</b>		

### Ithaca

College Teaching	60,777	57,255
Academic Department Space	891,788	749,350
College Administrative Space – Central Units	45,726	40,510
Other Programs	15,651	14,086
Cornell University Agricultural Experiment Station (CUAES)	253,011	253,011
Academic Dept. Field Support	256,760	256,760
Animal Science Farms	330,350	330,350
Academic Special & Field Support	62,605	62,605
Mann Library	146,745	146,745
Cornell Plantations	38,962	38,962
<i>Ithaca Total</i>	<i>2,102,375</i>	<i>1,949,634</i>

### Geneva

Academic Department Space	118,064	69,515
College Administrative Space – Central Units	17,380	16,307
New York State Agricultural Experiment Station (NYSAES)	98,474	98,474
Academic Special & Field Support	115,313	115,313
Lee Library	5,381	5,381
<i>Geneva Total</i>	<i>354,612</i>	<i>304,990</i>
<b>Total (NASF)</b>	<b>2,456,987</b>	<b>2,254,624</b>

**Table 3.17: Discounted College Space Inventory Summary**

Space Efficiency Discount Factors - Geneva			
Building Age Category	Buildings	Space Categories	Discount Factor
Beaux-Arts	Hedrick Hall	All categories	10%
	Jordan Hall		
	Sturtevant Hall		
Mid-Century Modern		Teaching labs, research labs, prep rooms, etc.	10%
		Sturtevant Hall	5%
Late 20th Century	Barton Laboratory	General classrooms	5%
		Teaching labs, research labs, prep rooms, etc.	
		Office – Offices and office support space	0%
		Resource Collections	
		Food service facilities	
Other – Lounges, storage space, etc.			
21st Century	Agricultural Science Research Lab (as redeveloped)	All categories	0%

**Table 3.16: FMP space efficiency discount factors (NYSAES Geneva)**

## 3.3 Facility Assessment Synthesis

Key findings of the building condition assessment and fit-to-function space assessment were synthesized to support further steps in the facility planning process. This synthesis ensures facility planning decisions comprehensively address both

building condition and the functional quality of space within buildings. The outcomes of this process are illustrated in Figures 3.9 (Ithaca) and 3.10 (Geneva), where building condition is indicated by the color of the buildings and fit-to-function

is indicated by the color of the building outline. Decisions regarding building renewal or divestment may be based on building condition, space quality or both of these factors combined.



Figure 3.9: Facility assessment synthesis – Ithaca Campus



Figure 3.10: Facility assessment synthesis – NYSAES Geneva





# 4 Space Requirements

This chapter identifies the amount of space required on the Ithaca and Geneva campuses to accommodate CALS' long-term academic plan goals. It also summarizes planning assumptions and space standards and guidelines supporting these space requirements.

- 
- 4.1 Overview of Space Needs
  - 4.2 Key Space Program Inputs
  - 4.3 Long-term Facility Development Assumptions
  - 4.4 Space Standards
  - 4.5 Space Requirements

## | 4.1 Overview of Space Needs

A primary goal of the FMP is to determine the current and future functional space needs of CALS' many users (Chapter 1). The department-specific space allocations for all activities and users is a foundational component. This supports the identification of the amount of academic, administrative and other types of space required on the Ithaca and Geneva campuses to successfully carry out the College's academic mission and accommodate long-term academic plan goals.

The space allocation model is an input-based instrument where requirements for space can be assessed on the basis of a number of variables, such as academic program offerings and enrollments; staff establishments including faculty lines and positions in research and extension enterprises; and administrative and technical support. Allocations are calculated by applying space allowances to the activities that must be accommodated. The process of determining space allocations included confirming existing activities, enrollment, faculty and staff, and course offerings; refining and applying standards and guidelines to

determine actual space allocation; and extrapolating growth and changes.

The space allocation model looks at all key categories of space that support the teaching, research, extension and outreach activities of the College's academic departments. A number of sources were considered in selecting appropriate space allowances, including:

- Cornell University and CALS-specific guidelines
- SUNY SUCF standards
- Consultant recommendations from other educational systems and institutions in other jurisdictions

The FMP space allocations developed through this review provide order of magnitude space budgets for spaces and activities to be accommodated over the planning period. They provide a benchmark to assess the degree of fit provided by existing accommodation and help to identify accommodation issues that need to be addressed in order to provide the best possible space in an efficient manner.

The model also allows the College to test scenarios for various futures, such as changes to enrollments; changes to numbers of faculty lines and other categories of staff; consolidation or reconfiguration of academic departments; consolidation or reconfiguration of College service units; growth or shrinkage in the scale of various operations; and other parameters that affect College operations.

The FMP space allocation model is intended to be a dynamic instrument that can be updated to reflect changes in direction and intention. Inputs can be reviewed and, where appropriate, revised so as to capture the College's strategic intentions when updating space requirements.

The space allocation model is an important tool in the continued application of the FMP Principles, as identified in Chapter 1. The model provides the basis for strong facility planning and space management practices and supports equity and adequacy in the distribution of facilities resources while ensuring that resources are used efficiently.

## | 4.2 Key Space Program Inputs

The following space planning policies and initiatives have informed the development of the FMP:

### **CALS Academic Priorities**

- Land-Grant Mission
- Applied Social Sciences
- Environmental Sciences
- New Life Sciences

### **CALS Planning Directions**

- College's mission and goals
- Departmental vision statements, strategic directions
- Programming, enrollment, staffing plans
- Outreach and research activities
- Capital planning priorities
- Economic context in which CALS operates.

### **Cornell University Planning Framework**

- Cornell Strategic Plan
- Cornell Master Plan for Ithaca Campus
- Various sustainability initiatives
- Cornell University Capital Plan

### **SUNY/SUCF Capital Planning**

- SUNY Cornell Capital Plan
- SUCF capital priorities

A wide range of information sources were consulted to develop the department space requirements, including:

- Strategic plans and mission statements
- Undergraduate and graduate academic program and enrollment information
- Scope of research, extension and outreach enterprises
- Staff levels for College activities and services
- Databases including staffing lists, space inventories and building drawings provided by the College;
- Meetings with academic and administrative staff in the departments;
- Guided tours of department facilities; and
- Responses to a questionnaire issued to garner information on research activities and suitable accommodation requirements.

### 4.2.1 Undergraduate Program Enrollments

Enrollments in program majors are shown in Table 4.1. Over the planning period, the College anticipates that undergraduate enrollments will be stable, although there will be shifts in levels in particular programs to reflect student interests.

Field of Study – Program Majors	2013	2018	2023
Agricultural Sciences	100	100	100
Animal Science	420	400	400
Applied Economics and Management	690	700	700
Atmospheric Sciences	50	60	60
Biological Engineering	100	90	80
Biological Sciences	650	640	630
Biology and Society	120	120	120
Biometry and Statistics	90	100	100
Communication	275	275	275
Development Sociology	85	85	85
Entomology	40	40	40
Environmental Engineering	85	100	110
Food Science	100	120	120
Information Science	35	35	35
International Agriculture and Rural Development	50	50	50
Interdisciplinary Study in Applied Life Sciences	95	75	65
Landscape Architecture	65	65	65
Natural Resources	195	200	205
Nutritional Sciences	100	110	120
Plant Sciences	80	100	100
Science of Earth Systems	30	30	30
Science of Natural & Environmental Systems	105	120	120
Viticulture and Enology	40	40	45
<b>Totals</b>	<b>3,600</b>	<b>3,655</b>	<b>3,655</b>

**Table 4.1: Undergraduate Program Enrollments**

## 4.2.1 Graduate Program Enrollments

Enrollments in graduate programs are primary drivers of space for both office accommodation and lab and project space. Targets for the FMP, shown in Table 4.2, have been collected from a variety of sources. The targets represent projections for facility master planning purposes only, and do not constitute approved enrollment allocations or targets for any year.

Department	Current	FMP Input
<b>Ithaca</b>		
Animal Science	40	50
Applied Economics & Management	100	100
Biological & Environmental Engineering (CALS only)	76	100
Biological Statistics & Computational Biology	25	30
Communication	31	35
Crop and Soil Sciences	31	50
Development Sociology	40	50
Earth & Atmospheric Sciences (Atmospheric)	8	12
Ecology and Evolutionary Biology	65	70
Education	71	n/a
Entomology	34	35
Food Science	80	100
Horticulture	51	60
Landscape Architecture	53	70
Microbiology	28	44
Molecular Biology & Genetics	171	175
Natural Resources	47	80
Neurobiology & Behavior	39	45
Nutritional Sciences	65	122
Plant Biology	40	60
Plant Breeding & Genetics	33	50
Plant Pathology & Plant-Microbe Biology	34	53
Redeployed from Education	n/a	45
<i>Sub-total</i>	1,162	1,436
<b>Geneva</b>		
Entomology	7	18
Food Science & Technology	28	36
Horticultural Science	12	18
Plant Pathology & Plant-Microbe Biology	8	12
<i>Sub-total</i>	55	84
<b>College Total</b>	<b>1,217</b>	<b>1,520</b>

Table 4.2: Graduate Program Enrollments

#### 4.2.1 Full Time Faculty Positions (Principal Investigators)

Targets for full time faculty positions, shown in Table 4.3, were provided by the College for full-time faculty positions in each academic department.

Department	Current Faculty Count by College <sup>1</sup>				Projected Faculty Count by College			
	CALS	Arts & Science	Human Ecology	Current Total	CALS	Arts & Science	Human Ecology	Proj. Total
Animal Science	21			21	21			21
Applied Economics & Management	37			37	36			36
Biological & Environmental Engineering	20	1		21	22	1		23
Biological Statistics & Computational Biology	8			8	8			8
Communication	16			16	14			14
Crop and Soil Sciences	15			15	15			15
Development Sociology	17			17	15			15
Earth & Atmospheric Sciences <sup>2</sup>	6	16		22	6	16		22
Ecology and Evolutionary Biology	17	8		25	14	8		22
Entomology					13			13
Entomology (Geneva)	25			25	10			10
Food Science					13			13
Food Science & Technology (Geneva)	19			19	8			8
Horticulture					21			21
Horticultural Science (Geneva)	35			35	13			13
Landscape Architecture	6			6	7			7
Microbiology	11			11	11			11
Molecular Biology & Genetics	14	20		34	15	20		35
Natural Resources	20			20	20			20
Neurobiology & Behavior	6	12		18	8	12		20
Nutritional Sciences – CALS	8		24	32	10		24	34
Plant Biology	15	1		16	15	1		16
Plant Breeding & Genetics	13			13	12			12
Plant Pathology & Plant-Microbe Biology					18			18
Plant Pathology & Plant-Microbe Biology (Geneva)	27			27	11			11
Unallocated	4			4	11			11
<b>College Total<sup>3</sup></b>	<b>360</b>	<b>58</b>	<b>24</b>	<b>442</b>	<b>367</b>	<b>58</b>	<b>24</b>	<b>449</b>
<b>CALS FMP Planning Input</b>	<b>360</b>	<b>14</b>	<b>24</b>	<b>398</b>	<b>367</b>	<b>14</b>	<b>24</b>	<b>405</b>

**Table 4.3 Full Time Faculty Positions (Principal Investigators)**

<sup>1</sup> Current figures from March 22, 2011 shown for departments with faculty from multiple colleges only.

<sup>2</sup> Earth & Atmospheric Sciences - Arts & Sciences faculty are located in Snee Hall. Only the six CALS faculty in Bradfield Hall, have been included in the FMP.

<sup>3</sup> The five faculty appointed at the Lab of Ornithology are not included in this tabulation.

## 4.3 Long-term Facility Development Assumptions

Targeted expansion assumptions will ensure the FMP will be responsive to potential future change. These assumptions provide choice for future development directions and provide capacity for future opportunities while ensuring a realistic and achievable plan. Making use of the capacity provided over the 20-year planning horizon is not required for the success of the FMP. The assumptions simply provide flexibility to allow for changes that the College might pursue.

The development assumptions are anchored in the FMP planning principles. While allowing flexibility, they are anchored by the space allocation model, which supports equitable and efficient distribution of resources. Efficient use of resources and limited development assumptions prioritize sustainability while ensuring high quality facility resources.

The following assumptions have been used to identify planned space requirements, with further detail provided in Table 4.4.

- **Teaching:** a 10% expansion factor to accommodate new courses, additional laboratory contact hours in current and new programs, new teaching modes and other

changes to undergraduate program delivery

- **Research:** a 25% expansion factor to accommodate new areas of inquiry, expansion of existing programs, evolving lab practices and funding opportunities. Laboratory planning experience consistently demonstrates a need for additional research laboratory and support space. Such space is required to house the analytical equipment that is a critical part of current research enterprises and to accommodate growth in the size of project teams that provide the range of skills and specializations that modern lab-based research demands.
- **Academic Office:** a 10% expansion factor to accommodate additional graduate students and expanded research teams.
- **Administrative Office:** no expansion factor is provided for administrative uses.
- **Resource Collections and Special & Field Support:** needs are assessed on a function by function basis with no overall expansion factor.
- **Other:** a 10% expansion factor to accommodate new activities that may drive a need for additional space of various types including workshops, special use facilities, space for informal study, etc.

### Long-term Development Assumptions

Planning Categories	Capacity Increase
Teaching Space – classrooms and laboratories <sup>1</sup>	10%
Research Space	25%
Academic Office Space <sup>2</sup>	10%
Administrative Office Space – academic and administrative departments	0%
Resource Collections <sup>3</sup>	0%
Special and Field Support	0%
Animal Quarters	0%
Other Space Categories <sup>4</sup>	10%
Dept Special and Field Support	0%
Greenhouses and Greenhouse Support Space (CUAES & NYSAES)	0%
Common Field Facilities (CUAES & NYSAES)	0%
Library (Ithaca & Geneva)	0%

**Table 4.4: Long-term growth assumptions**

Notes:

<sup>1</sup> Primarily represents capacity to accommodate new teaching pedagogies and technological advancements.

<sup>2</sup> Primarily represents change in research team size including some growth for graduate student population.

<sup>3</sup> Entomology and Plant Biology collections.

<sup>4</sup> Includes informal study and student lounge space allocation; storage allocations for academic department records; mechanical/wood/welding and similar workshops that are operated as department resources; exhibit spaces

## 4.4 Space Standards

A system of space standards was developed to generate the requirements for the various types of space that accommodate the wide range of College activities. The standards are organized according to the major space categories used in describing the College’s facilities, and the recommended space allocations have been developed using a variety of sources, principally those issued by Cornell University and the State University Construction Fund (SUCF).

The following sections present the recommended utilization and space standards adopted for the FMP. Where FMP space standards depart from the standards of Cornell University and SUCF, they represent the recommendations of the FMP consultant team.

### 4.4.1 Instructional Space

In order to determine instructional space requirements, utilization and demand analyses were carried out. The utilization analysis considered CALS and University courses held in both CALS scheduled and University scheduled spaces, in all CALS buildings. The demand analysis assessed CALS requirements for teaching space. An activity model was also generated which correlated teaching activity with room types and capacities. Further details regarding the instructional space utilization and demand analyses can be found in Additional Report B3 (*Ithaca and Geneva Space Programming Report*).

Instructional space requirements are generated using formulas that consider an activity measure such as student contact hours, room utilization targets in hours per week, seat utilization targets expressed as average number of seats used per session and floor area per seat or lab station. The space factors calculated from these formulas are multiplied by FTE enrollment counts to generate the required building area expressed in net assignable square feet.

### General Purpose Classroom Space

The Cornell University Space Planning Guidelines provide a room utilization target range of 55 to 65% of the available hours per week. The seat utilization target is 75% of the available stations. The SUCF Facility Programming Standards document targets slightly higher utilization rates shown in the following table. The guidelines adopted for the Facility Master Plan uses ranges for both values with higher values for rooms with capacities of 120 seats or more.

	Room Utilization	Seat Utilization
<b>Cornell Guidelines</b>	Range: 55-65%	75%
<b>SUCF Standards</b>	75%	80%
<b>CALS FMP Guidelines</b>	Range: 60-70%	Range: 70-80%

**Table 4.5. Utilization Rate Targets for Classrooms**

The number of hours of activity to be accommodated is multiplied by a station area and divided by the combined utilization target to generate an allowance per FTE student. SUCF

standards use a station area range of 10-20 NASF for all classroom space.

$$\text{Space Factor} = \frac{\text{Average Weekly Contact Hours} \times \text{Station Area}}{28.32 \text{ Hours per Station}}$$

This space factor multiplied by the FTE enrollment generates the required area.

The FMP guidelines use a range of station sizes depending on room capacities to reflect the difference in efficiencies between low capacity and high capacity rooms. The calculation to generate the total area requirement is consistent with the SUCF formula, allowing for the different utilization rates and station areas.

#### Dedicated Instructional Laboratories

A similar process is used to generate space allocations for dedicated instructional laboratory space. The utilization rate targets and station areas used reflect the specialized nature of these spaces. For dedicated teaching laboratories, a lower target is generally appropriate in order to allow time for set-up and take-down, maintenance of laboratory infrastructure and equipment, and free time for students' self-directed and project work.

Further restrictions on the use of teaching laboratories may flow from scheduling practices that restrict the number of hours per week during which lab sessions can be scheduled.

Cornell University Space Planning Guidelines provide a room utilization target of 44% of 45 available weekly hours and a seat utilization target of 80% of the available lab stations. SUCF Facility Programming Standards provide a room utilization target of 53% of 45 available weekly hours and a seat utilization target of 80% of the available lab stations. The Guidelines adopted for the Facility Master Plan use a common utilization rate target of 60% for both room and seat utilization.

	Room Utilization*	Seat Utilization
<b>Cornell Guidelines</b>	44%	80%
<b>SUCF Standards</b>	53%	80%
<b>CALS FMP Guidelines</b>	60%	60%

**Table 4.6. Utilization Rate Targets for Instructional Laboratories**

\* Room Utilization rates expressed as a factor of a 45 hour scheduling week.

The number of stations generated using the utilization factors are multiplied by a station area to generate the required laboratory area. SUCF standards use a station area of 50 nasf for life and physical science teaching laboratories. The FMP guidelines apply an area of 60 nasf per station for life and physical science teaching laboratories and 30 nasf per station for computation laboratories.

The formula used for the FMP is:

$$\text{Space Requirements} = \frac{\text{Actual Weekly Student Contact Hours} \times \text{Station Area}}{\text{Room Utilization Rate} \times \text{Station Utilization Rate}}$$

An additional area allowance of 50% of the instructional space is allocated for laboratory support spaces such as preparation rooms, equipment rooms, lab maintenance and workstations for laboratory support staff.

## 4.4.2 Research Space

FMP research space standards are generated from two main inputs:

1. Data about the scope and nature of the research enterprise in academic departments has been used to provide a model for the composition of typical research teams in a range of disciplines. The model counts principal investigators, post-doctoral fellows, research associates and assistants, graduate students, etc. and generates an estimate of the typical size of research team that might be encountered in the various academic departments and discipline groups
2. Research activities have been characterized according to two primary models: experimental activity requiring specialist space such as wet bench, dry bench or high-bay, light industrial workshop environments; and computational activity and other desk-based types of work that require dry space configured as offices, project workrooms, meeting rooms, focus group and interview rooms, etc.

For each type of activity and research participant, a space allocation has been generated that reflects, on average, the amount of space that each person would require. For each academic department, the research team composition and the space allocation are multiplied to generate a space allocation for the department. The resulting floor area should be considered as the pool of space that would be available to assign to research teams and not at minimum or maximum entitlements that would be available to a principal investigator.

The CALS Space Management Guidelines do not provide specific floor area guidelines for generating departmental research space requirements. Rather, the guidelines address how available space should be allocated to researchers based on levels of activity and the composition of research teams.

The Cornell University Space Planning Guidelines uses an input model that provides a standard space allocation for all research team members irrespective of their function.

The State University Construction Fund (SUCF) Facility Programming Standards document provides recommendations for research space based on four discipline categories: Engineering, Physical

Science, Behavioral Science and Social Science. Space allocations are made for Faculty and graduate students only. No separate allocations are made for other research team members or for research support spaces.

As a further input to the process of generating appropriate research space standards, the project team reviewed standards in other jurisdictions, institutions and systems as well as examples of existing space allocations at CALS that illustrate effective and efficient practice.

Table 4.7 presents the range of standards discussed above. The recommended FMP research space standards provide a system that directly reflects the nature of the research enterprise at CALS by including space allowances that are specifically tailored to the composition of research teams. A significant advantage of a graduated system of space allocations is that there is greater efficiency achieved as research teams grow in size. The standards reflect the FMP principles, providing a strong facility planning and space management tool, and ensuring quality, equity and adequacy of facilities while using research space resources efficiently and sustainably.

Input Category	Cornell Research Space Standards		SUNY Research Space Standards		FMP Research Space Standards	
	Dry/Computational Workspace (NASF)	Wet/Dry Bench Environments (NASF)	Dry/Computational Workspace (NASF)	Wet/Dry Bench Environments (NASF)	Dry/Computational Workspace (NASF)	Wet/Dry Bench Environments (NASF)
Principal Investigators	Office allocation only	200	30	180	80	360
Post-doctoral Associates	Office allocation only	200	n/a	n/a	40	180
Research Associates	Office allocation only	200	Office allocation only	n/a	40	180
Graduate Students	Office allocation only	200	20	120	Office allocation only	90
Research Support Space (% of lab allocation)	n/a	15% – 25%	n/a	n/a	25%	25% + 25%*

**Table 4.7: Research Space Planning Guidelines**

\* Preparation and Storage Space – 25% + Bench and Instrument Space – 25%

### 4.4.3 Office Space

Recommended allocations are based on allowances for specific types of academic, administrative, technical and support appointments. Office space allocations are generated from the inputs for various categories of staff and students. Office support space is allocated as a percentage of office areas to account for meeting space, reception areas, copier and workrooms, file storage rooms and staff lounge space. Guidelines for office space are identified in Table 4.8.

Position Titles	Cornell Guidelines (NASF)	SUNY Guidelines (NASF)	CALS Guidelines (NASF)
<b>Academic Office Space</b>			
Dept. Chair	200	180	180-200
Director	n/a	n/a	180-200
Dept. Ext. Leader	n/a	n/a	180-200
Faculty (Studio/Office)	200	180	180
Faculty	160 <sup>1</sup>	120/80 <sup>2</sup>	160 <sup>1</sup>
Visiting Professor	120/80 <sup>2</sup>	120/80 <sup>2</sup>	120/80 <sup>2</sup>
Emeritus Professor	80 <sup>1</sup>	120/80 <sup>2</sup>	80 <sup>2</sup>
Lecturer/Instructor	120/80 <sup>2</sup>	120/80 <sup>2</sup>	120/80 <sup>2</sup>
Post-Doctoral Associate	80 <sup>2</sup>	60/30 <sup>2</sup>	80 <sup>2</sup>
Sr. Research/Extension Associate	n/a	n/a	120-160
Research/Extension Associate	120/80 <sup>2</sup>	120/80 <sup>2</sup>	120
Graduate Assistant	60/40	60/30 <sup>2</sup>	40 <sup>2</sup>
Graduate Student	60/40	60/30 <sup>2</sup>	40 <sup>2</sup>
<b>Department Administrative Office Space</b>			
Administrative Manager	120/80 <sup>2</sup>	120/80 <sup>2</sup>	120-140
Program Administrator	160/80 <sup>2</sup>	180	160-180
Supervisor	120/80 <sup>2</sup>	120/80 <sup>2</sup>	120/80 <sup>2</sup>
Admin/Clerical Positions	80 <sup>2</sup>	120/80 <sup>2</sup>	120/80 <sup>2</sup>
Technician	80 <sup>2</sup>	120/80 <sup>2</sup>	120/80 <sup>2</sup>

**Table 4.8: CALS' office space planning guidelines**

Notes:

1 Cornell University has a long standing agreement with SUCF allowing the use of 160 NASF for Faculty Offices

2 Recommended multiple occupancy for most positions, 80 NASF per occupant

#### 4.4.4 Field Support and Special Facilities

Special facilities house activities that cannot be modeled to generate space requirements and for which there are no accepted standards. Examples at CALS include:

- Collections of special teaching or research materials such as the Insect Collection housed in the Department of Entomology.
- Specialized laboratory facilities constructed to support particular research activities that have limited or no capacity to be shared with other users or to be reallocated to other uses. Allocations for these types of facilities are generally indicated as equivalent to existing areas where these are considered adequate for the current and foreseen levels of use or reduced or increased where a need for a change to the current capacity is identified. Confirmation of this requirement would be made when specific capital projects addressing the facilities are initiated, and where the proposed scope includes replacement or significant upgrading. Examples include the Pilot Plant in the Department of Food Science and the arthropod quarantine facility in the Department of Entomology.

Where these activities or materials are expected to be sustained over the long-term, space allocations have been developed on a case by case basis using observations of the current accommodation and the degree to which it is effectively used. These assessments are adjustments to account for anticipated changes to direction or scope of the various enterprises. These area assessments represent a “soft” assessment of need, sufficient to generate an “order of magnitude” number suitable for master planning work. More detailed assessments would be carried out for specific projects as they move to the implementation phase.

For field support facilities, an estimate of the extent of space required in these categories has been made on the basis of existing demand, adjusted to reflect future academic trends and staffing plans. In general terms, the expectation is that this facility type will be a College-managed resource with access provided to users on the basis of demonstrated need.

The Guterman Bioclimatic Laboratory is an existing example of a college-managed centralized teaching and research support facility that provides lab spaces, growth chambers and greenhouses which are available for all CALS departments.

Shared field support facilities can be located on the REM Lab site and the Mt. Pleasant farm lands. Some existing structures at Mt. Pleasant can be repurposed for field support and College storage uses.

#### 4.4.5 Other Space

Generally, academic departments are allocated additional support space for a range of general activities, scaled to suit the overall size of the department.

## 4.5 Space Requirements

Overall College Space Requirements Department	Total (NASF)
<b>Ithaca (Main Campus)</b>	
College Teaching	78,990
Academic Department Space	967,734
College Administrative Space – Central Units	42,680
Cornell University Agricultural Experiment Station (CUAES)	282,538
Mann Library	150,000
Cornell Plantations	34,154
Other Programs	16,451
<i>Sub-total</i>	<i>1,572,547</i>
<b>Ithaca (Periphery)</b>	
Academic Department Field Support	214,350
Animal Science Farms	289,200
Academic Special & Field Support	69,000
<i>Sub-total</i>	<i>572,550</i>
<b>Geneva</b>	
Academic Department Space	118,792
College Administrative Space – Central Units	47,130
New York State Agricultural Experiment Station (NYSAES)	100,120
Lee Library	5,079
Academic Special & Field Support	47,325
<i>Sub-total</i>	<i>318,446</i>
<b>Total (NASF)</b>	<b>2,463,543</b>

**Table 4.9: Summary of College space requirements for the planning period (Ithaca and Geneva). Further detail provided in Tables 4.10 to 4.14.**

Core Academic Space Department	Total (NASF)
<b>College Teaching</b>	
Common Instructional Space	78,990
<i>Sub-total</i>	<i>78,990</i>
<b>Academic Department</b>	
Animal Science	54,384
Applied Economics & Management	35,683
Bio Statistics & Computational Biology	9,510
Biological & Environmental Engineering	88,567
Communication	15,809
Crop and Soil Sciences	34,484
Development Sociology	13,541
Earth and Atmospheric Science	7,968
Ecology & Evolutionary Biology	49,895
Education	14,306
Entomology	46,695
Food Science	72,102
Horticulture	51,363
Landscape Architecture	19,913
Microbiology	26,478
Molecular Biology and Genetics	88,079
Natural Resources	55,053
Neurobiology & Behavior	61,104
Nutritional Sciences	14,911
Plant Biology	60,796
Plant Breeding & Genetics	34,694
Plant Pathology & Plant-Microbe Biology	49,745
Nutritional Sciences - CHE	62,654
<i>Sub-total</i>	<i>967,734</i>
<b>Total (NASF)</b>	<b>1,046,724</b>

**Table 4.10: Ithaca core academic space requirements**

Academic Field Support Department	Total (NASF)
<b>Academic Department Field Support</b>	
Animal Science	30,000
Biological & Environmental Engineering	7,000
Crop and Soil Sciences	24,000
Earth and Atmospheric Science	250
Ecology & Evolutionary Biology	1,500
Entomology	19,600
Horticulture	40,000
Natural Resources	11,250
Plant Biology	1,000
Plant Breeding & Genetics	68,500
Plant Pathology & Plant-Microbe Biology	11,250
<b>Total (NASF)</b>	<b>214,350</b>

**Table 4.11: Ithaca near campus academic department field support space requirements**

Other Units & Programs Department	Total (NASF)
<b>College Administration – Central Units</b>	
Administrative Offices	22,680
Operations & Facilities	20,000
<i>Sub-total</i>	<i>42,680</i>
<b>Cornell University Agricultural Experiment Station (CUAES)</b>	
CUAES Administrative Unit	2,538
CUAES Greenhouse & Propagation Facilities	182,500
Farm Services Unit	97,500
<i>Sub-total</i>	<i>282,538</i>
<b>Mann Library</b>	
Mann Library	150,000
<b>Cornell Plantations</b>	
Cornell Plantations	34,154
<b>Other Programs</b>	
American Indian Program	1,239
International Programs	4,212
NYSIP	11,000
<i>Sub-total</i>	<i>16,451</i>
<b>Total (NASF)</b>	<b>525,823</b>

**Table 4.12: Ithaca other units and programs space requirements**

Periphery Department	Total (NASF)
<b>Animal Science Farms</b>	
Poultry Unit	50,000
Swine Unit	15,000
Teaching and Research Center Harford	224,200
<i>Sub-total</i>	<i>289,200</i>
<b>Academic Special &amp; Field Support</b>	
Bluegrass Lane Facilities	10,000
Freeville Farm Facilities	34,000
Pomology Facilities	25,000
<i>Sub-total</i>	<i>69,000</i>
<b>Total (NASF)</b>	<b>358,200</b>

**Table 4.13: Ithaca periphery academic department field support space requirements**

Geneva Core Department	Total (NASF)
<b>Academic Department Space</b>	
Entomology	21,906
Food Science & Technology	32,138
Horticultural Sciences	42,809
Plant Pathology	21,939
<i>Sub-total</i>	<i>118,792</i>
<b>College Administrative Space – Central Units</b>	
Administrative Offices	11,330
Operations & Facilities	35,800
<i>Sub-total</i>	<i>47,130</i>
<b>New York State Agricultural Experiment Station (NYSAES)</b>	
Field Research Unit	42,620
NYSAES	57,500
<i>Sub-total</i>	<i>100,120</i>
<b>Lee Library</b>	
Lee Library	5,079
<i>Sub-total</i>	<i>5,079</i>
<b>Academic Special &amp; Field Support</b>	
Entomology	8,925
Horticultural Sciences	24,000
Plant Pathology	14,400
<i>Sub-total</i>	<i>47,325</i>
<b>Total (NASF)</b>	<b>318,446</b>

**Table 4.14: Geneva space requirements (core academic, other units and field support)**





# 5 Facility Planning Framework

The Facility Planning Framework sets out comprehensive academic building space plans for the Ithaca Core Campus and NYSAES Geneva. It illustrates long-term space planning directions and corresponding capital projects that coordinate new construction, renovation, expansion and restoration of existing space and decommissioning of poor and/or inappropriate facilities.

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5.1 Space Planning Objectives

5.2 Discipline Areas

5.3 The Space Plans

# 5.1 Space Planning Objectives

As identified in Chapter 1, the following Planning Principles guided the evolution and outcomes of the Facility Master Plan:

- 1. Achieve quality, equity and adequacy of facilities**
- 2. Prioritize sustainability**
- 3. Use resources efficiently**
- 4. Manage the countryside as defined by the Cornell campus master plan**
- 5. Integrate with the campus master plan and university goals**
- 6. Strengthen facility planning and space management practices**
- 7. Reinforce CALS' presence and home on the Ithaca Campus**

The following space planning objectives represent a tangible interpretation of the FMP principles as they relate to the space plans. They provided a means for both developing and evaluating the space plans, ensuring that the planning principles underlying the FMP were embedded in the outcomes identified in each of the space plans. The space planning objectives are as follows:

## **College Shared Classroom Space**

- College shared classroom space, comprising a range of room types and capacities, will be distributed in a number of nodes located in major existing and proposed academic buildings to reflect relative demand in various campus areas. Preferred locations for these facilities are spaces with good public access and high visibility.
- Existing classroom spaces that provide a good teaching environment, are suitably located and have appropriate seating capacities will be retained and form the basis of the major teaching nodes. These rooms include a number of teaching spaces that are scheduled to be upgraded in current capital planning projects.

## **Undergraduate Instructional Laboratories**

- Undergraduate instructional labs will be distributed among the four discipline areas based on the location of the department homes of the departments responsible for delivery of these courses.

- Laboratories will be located in existing and proposed buildings, clustered in nodes, located in high profile areas and, optimally, located adjacent to lecture halls, classroom clusters and near research labs.
- Where possible, teaching laboratory clusters will share laboratory support facilities.

## **Research and Graduate Program Space**

- To reinforce the intention to plan beyond departmental boundaries as a long-term strategy, research laboratory, office and support facilities will be developed around the broad academic themes articulated by the College.
- For the research enterprise, planning emphasis will be placed on developing state-of-the-art flexible, adaptable and modular laboratory settings. Laboratory support facilities are intended to be shared resources. Capital projects for new construction, renovation and rehabilitation will address the identified space needs.

- Office space for research teams, including graduate students, will be included in these projects to provide close physical links among all participants and provide a collaborative environment that is responsive to changing needs and priorities.

#### **Academic Department Homes**

- Department homes, each comprising the department administrative unit, undergraduate teaching laboratories and office support facilities, are located according to the primary academic thrust of the department.
- Proposed locations for department homes will respect, as much as possible, historical associations with specific facilities as well as relationships among departments.
- Flexibility will be maintained in determining locations of department homes.

#### **College Administrative Space**

- Central administrative services will be consolidated in space fronting on the Ag Quad, focused on Roberts Hall.
- Consolidation is intended to improve the delivery of administrative services by central service units and reinforce the role of the Ag Quad as the home of the College.
- Allow flexibility in consolidating and locating back-of-house administrative functions.
- Distributed and department-specific service units, such as Business Centers, will be integrated within discipline areas to provide more effective support.

#### **Other Facilities**

Other categories of space such as social spaces, food services, storage space and shared seminar rooms will be distributed among the four discipline areas to reflect the demand generated by the relative student and staff populations of each zone.

## | 5.2 Discipline Areas

One of CALS' greatest strengths is the inter-related nature of academic discourse that occurs within and between the four academic disciplines of Economic & Community Vitality, Life Sciences, Environmental Sciences, and Food & Energy Systems. The FMP provides a framework to support and reflect these dynamic relationships. It supports a broad range of academic activities without dictating specific locations for each activity, providing opportunities for new, unanticipated relationships to emerge.

A planning tool, referred to as “discipline areas”, was devised to explore and frame discussion regarding activities at CALS. Each CALS academic department identified the proportion of its teaching, research and extension activities that relate to each of the College's four major thematic areas.

The four discipline areas provide a thematic focus for co-locating related departments, supporting a long-term move to plan beyond departmental boundaries. The discipline areas support the identification of strategic major capital projects that allow for the creation of interdisciplinary and translational science buildings. Space programming

is oriented towards defining space types without being prescriptive about specific users. A number of major capital projects intended to be comprehensive and transformative in scope are proposed to address critical space needs and space quality issues as well as CALS' academic priorities.


There are four discipline areas on the Ithaca Main Campus including **Life Sciences, Economic & Community Vitality, Environmental Sciences** and **Food & Energy Systems**. Figure 5.1 indicates the centre of gravity for each of the Ithaca discipline areas. For planning purposes, one discipline area was used for Geneva – **Food & Energy Systems**.

To promote interdisciplinarity, it is desirable to bring together students, faculty, and staff who pursue common research themes and who can make use of common support facilities. Through this plan, academic activities are allocated space to locations that provides for the richest possibilities for collaboration as well as the best-fit with building configuration and quality, irrespective of department affiliation.

“Department homes” (comprised of department administrative space, dedicated program teaching space and related support facilities) will continue to be located to reflect their discipline relationships and traditional allegiances with other College departments. However, the FMP recommendations allow for greater porosity between research activities, and not all activities of a specific department will be necessarily housed in contiguous space.



Figure 5.1: Academic Discipline Areas on the Ithaca Campus

 CALS-occupied buildings

## | 5.3 The Space Plans

The space plans provide detailed direction for the renewal of CALS' academic facilities on the Ithaca and Geneva campuses. Anchored in the planning principles, they form a comprehensive planning framework that will ensure an equitable and adequate distribution of high quality facilities across the College. The space plans provide a sustainable framework for facility renewal by maximizing the use of existing resources while investing strategically in targeted major capital projects. Full implementation over the 20-year planning period will ensure the College's facilities match its world-class reputation and fully support the academic mission of teaching, research and extension.

The five space plans are generally organized by discipline area, including the following:

- 5.3.1 Life Sciences
- 5.3.2 Economic & Community Vitality, Central Administrative Units and other Academic Programs
- 5.3.3 Environmental Sciences
- 5.3.4 Food & Energy Systems (Ithaca)
- 5.3.5 NYSAES Geneva Academic Departments & Administrative Units

For each space plan, the quantum and type of space required in each of these discipline areas was generated and matched to the location where these activities are anchored.

The space plans illustrate a balance of building renovation and rehabilitation and integrate capital projects that are already in the planning pipeline. In some instances, a need for new facilities (primarily wet labs) has been identified where retrofitting existing buildings cannot meet contemporary space standards.

Each of the following space plans includes:

- An overview of how the space plan supports instruction, research and outreach activities.
- A listing of Lead Departments (those departments that will likely have their administrative functions located in each respective discipline area)
- A listing of Key Initiatives
- Space requirements
- Planned space inventory

Each space plan also includes mapping of potential space configurations by individual building and floor. These are intended to be illustrative, not prescriptive, reflecting the optimal use of the available space. This mapping demonstrates the ability to achieve the space requirements, illustrates the space planning objectives outlined in Section 5.1, and serves as a departure point for further detailed facility space programming.



A number of planning scenarios were developed, illustrated and tested, which lead to the final direction for the FMP

### 5.3.1 Life Sciences

For disciplines with a common focus on fundamental research in life sciences, an integrative and translational science environment is required that will:

- **Provide appropriate settings for undergraduate science education.** These include suitable classroom space with multimedia capabilities, teaching laboratories and project space to support core courses and undergraduate research project activity. The assessment of space requirements for undergraduate courses in the life sciences needs to consider the impact that biological sciences program renewal may have on the teaching model. This process of renewal is currently underway at Cornell.
- **Provide flexible highly serviced laboratory spaces** to create opportunities for multidisciplinary, collaborative research work. Space is required for shared support facilities and services as well as working space for graduate thesis students. The College has identified a priority need to address the qualitative shortcomings of a large portion of the existing laboratory space that is available to

academic departments active in Life Sciences research. New investment in laboratories will ensure that the College has the flexibility to respond to evolving areas of investigation and changing lab practices. An investment in the network of support services will provide opportunities to coordinate and consolidate these activities for the benefit of all discipline areas.

- **Provide office space to house graduate students, and academic and administrative staff.**
- **Create settings that support the College's mandate in extension and outreach activities.** These activities can make use of the investment in lecture halls and classrooms and need to be enhanced with access to conference rooms and state-of-the-art distance conferencing facilities.

This space plan builds new capacity in the key College academic priority area of Life Sciences while maintaining close physical connections to related activities in the biotechnology building cluster.

The plan also enhances and complements recent investments in laboratory infrastructure that is already in place including Weill Hall and the all-weather passage under Tower Road that links the Plant Science Building and teaching greenhouses to the Life Sciences cluster on the south side of Tower Road. CALS identification with the Ag Quad is also strengthened.

#### Lead Departments

- Biological Statistics and Computational Biology
- Entomology
- Molecular Biology & Genetics
- Neurobiology and Behavior
- Nutritional Sciences
- Plant Biology
- Plant Pathology and Plant-Microbe Biology

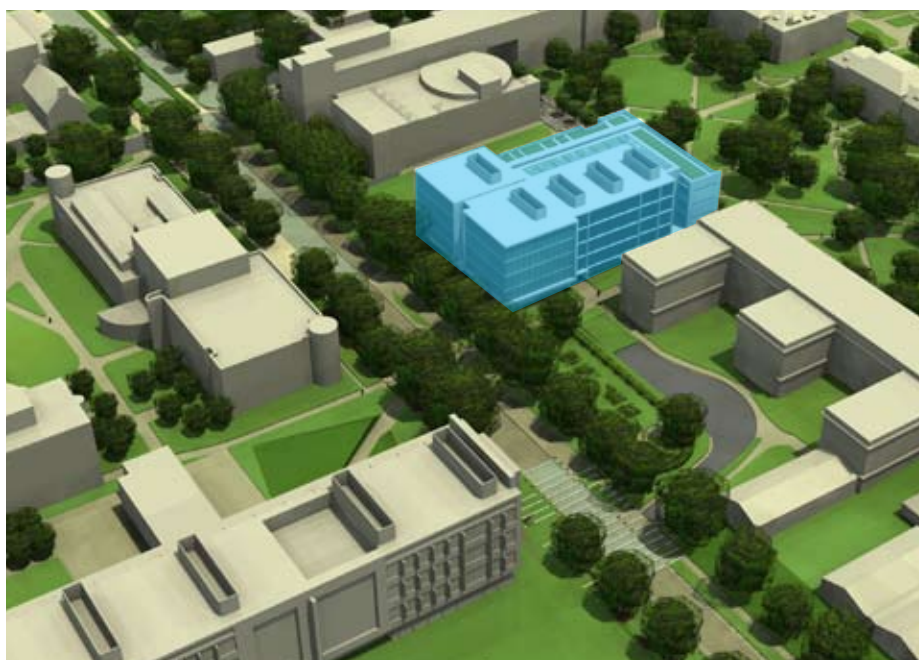
Life Sciences research programs exhibit strong links to programs in Food & Energy Systems and Environmental Sciences clusters.

## Key Initiatives

**Creation of a new Integrative and Translational Sciences teaching and research facility** located on the last available development site on the Ag Quad. To be developed in conjunction with the following. (See Section 8.1.1 for a detailed description of this initiative).

**A comprehensive renovation, expansion and restoration of the Plant Science Building.** (See Section 8.1.1 for a detailed description of this initiative).





**Comprehensive facilities renewal for existing Life Sciences facilities**, including phased upgrades to Bradfield Hall, Comstock Hall and the Corson/ Mudd/Science Atrium complex and Biotechnology Building. This renewal program will address building fabric and systems deficiencies.



## Space Requirements and Inventory Details

Space Category	Area (NASF)
Common College teaching space	24,697
<b>Academic Department Space</b>	
Instructional labs and support space	35,140
Research	256,909
Academic office space	100,190
Academic dept. administrative space	35,351
Animal quarters/resource collections	29,700
Other space	5,509
<i>Sub-total (NASF)</i>	<i>462,799</i>
<b>Total Area (NASF)</b>	<b>487,496</b>

Table 5.1: Space Requirements

	<b>Stable</b> (normal maintenance only)
	<b>Phased Renewal</b> (incremental upgrades to systems & fittings required to meet changing accommodation standards - primarily in laboratory and lab support areas)
	<b>Complete Renewal</b> (single stage redevelopment)
	<b>New Construction</b>

Building	CALS Teaching Space	Academic Department Space	College Administrative Space	Other Programs Space	Total CALS Space	Non CALS Space	Total Space (NASF)
1081 Comstock Hall	1,852	61,788	-	-	63,640	-	63,640
1018 Biotechnology Building	-	53,791	-	-	53,791	-	53,791
1019A Biological Science Atrium	1,220	2,765	-	-	3,985	-	3,985
1019E Corson Bio Science Wing	-	24,815	-	-	24,815	-	24,815
1019W Mudd Bio Science Wing	-	32,079	-	-	32,079	-	32,079
1022 Plant Science Building	4,645	77,072	1,018	-	82,735	-	82,735
1027 Mann Library (Plant Biology Space)	585	25,113	-	-	25,698	-	25,698
1014 Weill Hall	-	7,509	-	-	7,509	-	7,509
1028B Bradfield Hall	-	62,425	-	-	62,425	-	62,425
<i>Sub-total</i>	<i>8,302</i>	<i>347,357</i>	<i>1,018</i>	<i>-</i>	<i>356,677</i>	<i>-</i>	<i>356,677</i>
New LS Teaching and Research Facility	16,395	114,424	-	-	130,819	-	130,819
<b>Total Area (NASF)</b>	<b>24,697</b>	<b>461,781</b>	<b>1,018</b>	<b>-</b>	<b>487,496</b>	<b>-</b>	<b>487,496</b>

Table 5.2: Planned Space Inventory

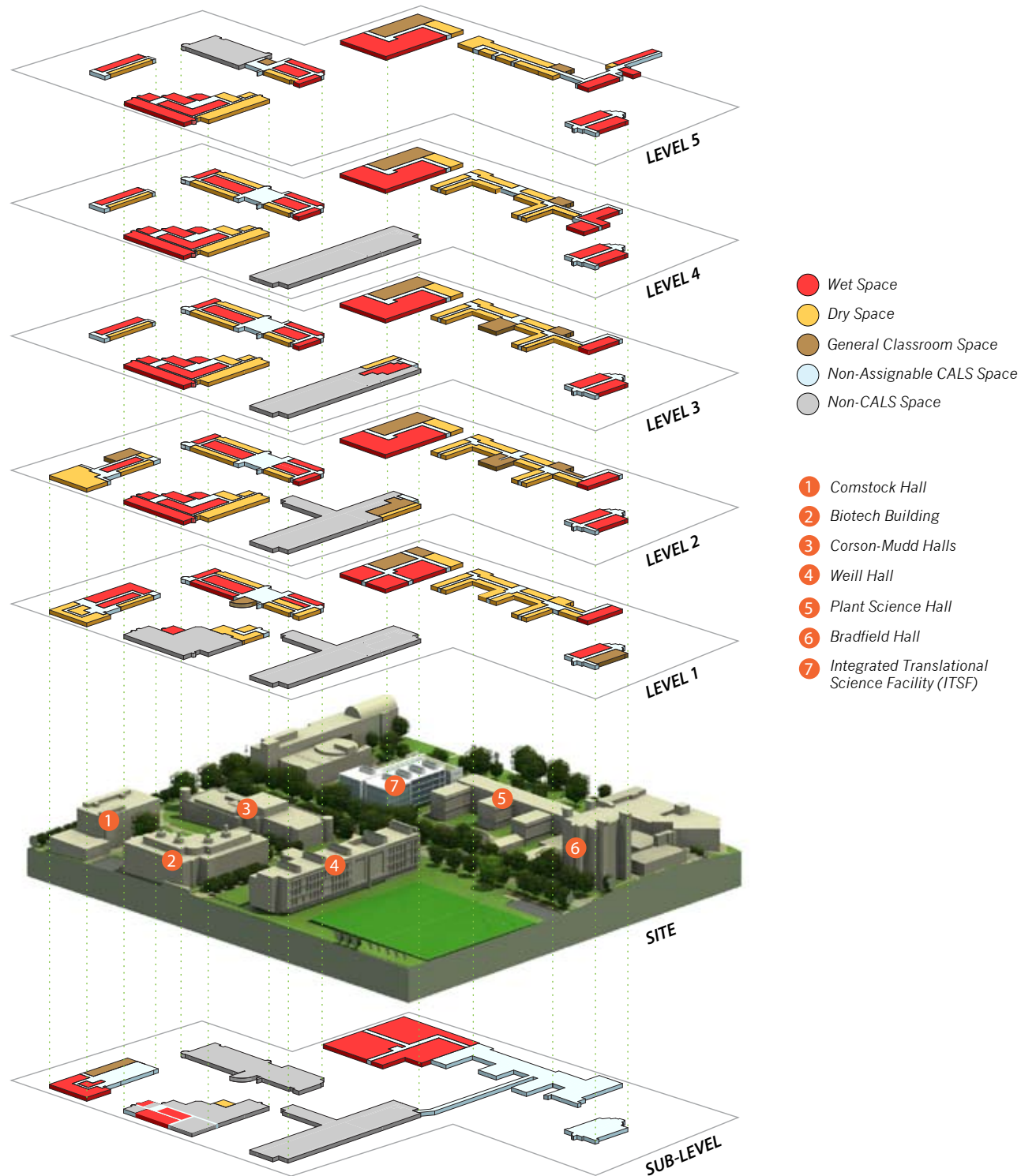


Figure 5.2: Life Sciences axonometric of programming for levels 1 - 4 and "sub-level"

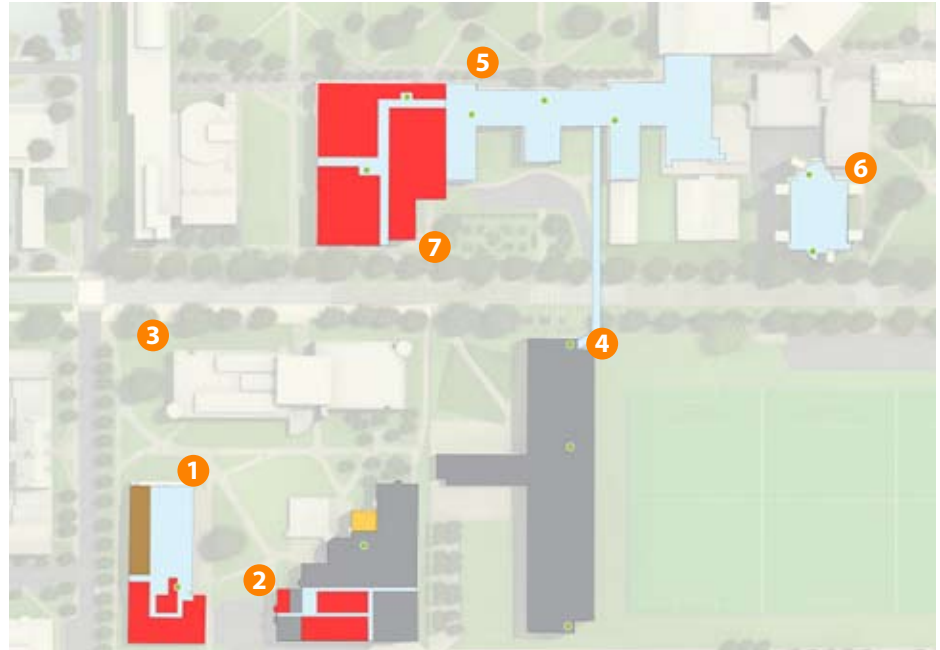
## Facilities Programming

- 1 Comstock Hall**
  - college teaching space 2|sub-level
  - academic department space 1|2|3|4|sub-level
- 2 Biotech Building**
  - academic office space 1|2|3|4|sub-level
- 3 Corson-Mudd Halls**
  - college teaching space 1|3|4
  - academic department space 1|2|3|4
- 4 Weill Hall**
  - academic department space 1|2
- 5 Plant Science Hall**
  - college teaching space 1|2|3
  - academic department space 1|2|3|4|sub-level
- 6 Bradfield Hall \***
  - college teaching space 1
  - academic department space 1|2|3|4|sub-level
- 7 Integrative and Translational Sciences Facility**

\* This facility is shared with the Environmental Sciences discipline area (see section 5.3.3).

### Legend

- Primary Corridor
- Vertical Circulation
- ▶ Main Entrance
- Wet Space
- Dry Space
- General Classroom Space
- Non-Assignable CALS Space
- Non-CALS Space



Facility use diagram: Sub-level programming



Facility use diagram: Level 1 programming



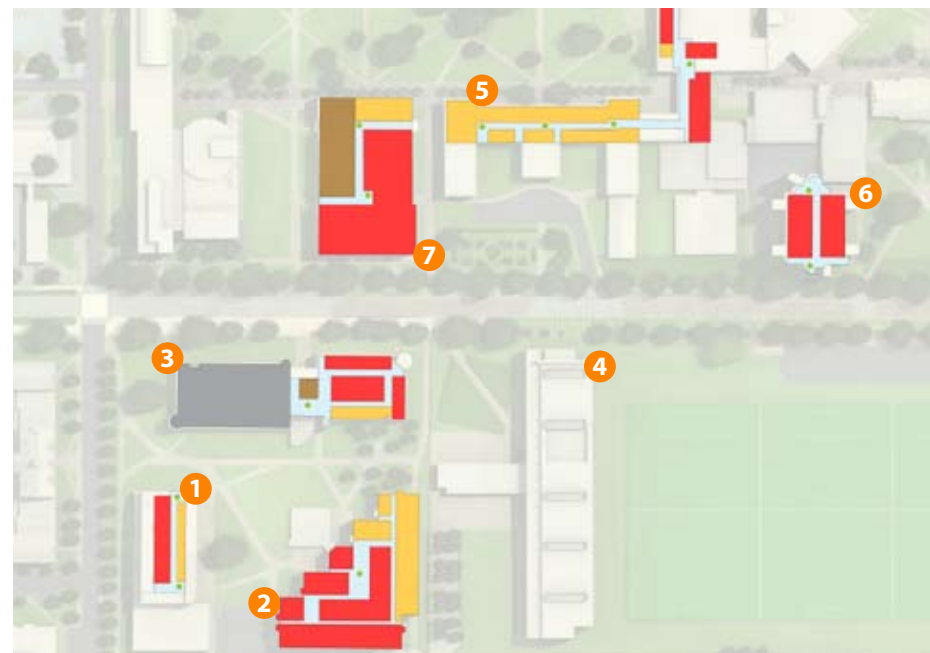
Facility use diagram: Level 2 programming



Facility use diagram: Level 4 programming



Facility use diagram: Level 3 programming



Facility use diagram: Level 5 programming (includes Level 5-11 for Bradfield Hall)

### 5.3.2 Economic & Community Vitality, Central Administrative Units and other Academic Programs

For disciplines with a common theme of addressing social needs and community development in the widest sense, suitable space will:

- **Provide appropriate settings for undergraduate education.** This includes classroom space with multimedia capabilities and workspace for undergraduate project activity.
- **Provide flexible dry work areas for research, extension and outreach activities** that foster multidisciplinary collaborative work and includes suitable office and workspaces for graduate students.
- **Provide office and office support space for graduate students, and academic and administrative staff.**
- **Create settings that support the College's mandate for public service to the citizens and communities of NYS** including lecture halls, conference rooms, and state-of-the-art distance conferencing facilities.

This space plan maintains a close physical connection between CALS Economic & Community Vitality programs with related departments and programs in the College of Human Ecology. It also builds on the Warren Hall renewal project and the Mann Library expansion and renovation project, providing new opportunities to achieve operating efficiencies in the provision of administrative services through consolidation of unit locations. It makes good use of the predominately office and classroom space typologies of Warren, Kennedy, Caldwell and (eventually) CCC by aligning department teaching, research and office needs. Like the Life Sciences space plan, this plan strengthens the identification of the Ag Quad with CALS.

#### Lead departments

- Dyson School of Applied Economics and Management
- Communication
- Development Sociology

#### Other Academic Programs

Office and study space for the American Indian Program, International Programs, and the NYSIP unit in Cornell's Plant Breeding extension program is provided.

#### Administrative Department Space

Space is provided for the College's central administrative units including Human Resources and Facilities and Operations. It is possible that some of these units be accommodated elsewhere depending on how the implementation of the FMP proceeds.

## Key Initiatives

**Comprehensive renovation and restoration of Warren Hall.** Space allocated for this project includes the department homes of the Dyson School of Applied Economics and Management and the Department of Development Sociology. College teaching space, including lecture halls and classrooms, is also provided.

**Phased occupancy of CCC and the balance of Caldwell Hall Space.** The space requirement assessment indicates that over the life of the FMP, additional space will be required to accommodate activities related to the Economic & Community Vitality discipline area, partially driven by space requirements for the Division of Nutritional Sciences. The preferred option for housing that activity is by expansion in Caldwell Hall and CCC. Occupying space in Caldwell Hall and CCC is a long-term aim for the College, contingent on existing non-CALS uses vacating their current accommodations in these buildings. This is subject to competing priorities and direction from the University.

### **Reallocations of space in Kennedy Hall.**

Further reallocations of space in Kennedy Hall will be associated with the plan to close the Education department and reassign academic and administrative staff to other academic units. This represents another opportunity to consolidate central administration in vacated space. Reallocation of space in Kennedy should be considered in conjunction with the long-term occupancy of CCC and Caldwell Hall.

## Space Requirements and Inventory Details

Space Category	Area (NASF)
Common College teaching space	22,697
<b>Academic Department Space</b>	
Instructional labs and support space	11,215
Research	39,731
Academic office space	49,647
Academic dept. administrative space	19,767
Other space	2,998
<i>Sub-total (nasf)</i>	<i>123,358</i>
<b>College Administrative Space</b>	
College administrative units	22,680
<b>Other Programs</b>	
American Indian Program	1,239
International Program	4,212
<i>Sub-total (NASF)</i>	<i>5,451</i>
<b>Total Area (NASF)</b>	<b>174,186</b>

Table 5.3: Space Requirements

Building	CALS Teaching Space	Academic Department Space	College Administrative Space	Other Programs Space	Total CALS Space	Non CALS Space	Total Space (NASF)
1026 Warren Hall	13,174	47,635	748	4,910	66,467	-	66,467
1025 Caldwell Hall	1,957	-	-	3,820	5,777	12,263	18,040
1080N Roberts Hall	-	-	22,851	-	22,851	-	22,851
1080S Kennedy Hall	7,177	33,576	409	-	41,162	-	41,162
1016 Computing & Communications Center	-	-	-	-	-	26,319	26,319
<b>Total Area (NASF)</b>	<b>22,308</b>	<b>81,211</b>	<b>24,008</b>	<b>8,730</b>	<b>136,257</b>	<b>38,582</b>	<b>174,839</b>

Table 5.4: Planned Space Inventory

- Stable**  
(normal maintenance only)
- Phased Renewal**  
(incremental upgrades to systems & fittings required to meet changing accommodation standards - primarily in laboratory and lab support areas)
- Complete Renewal**  
(single stage redevelopment)
- New Construction**

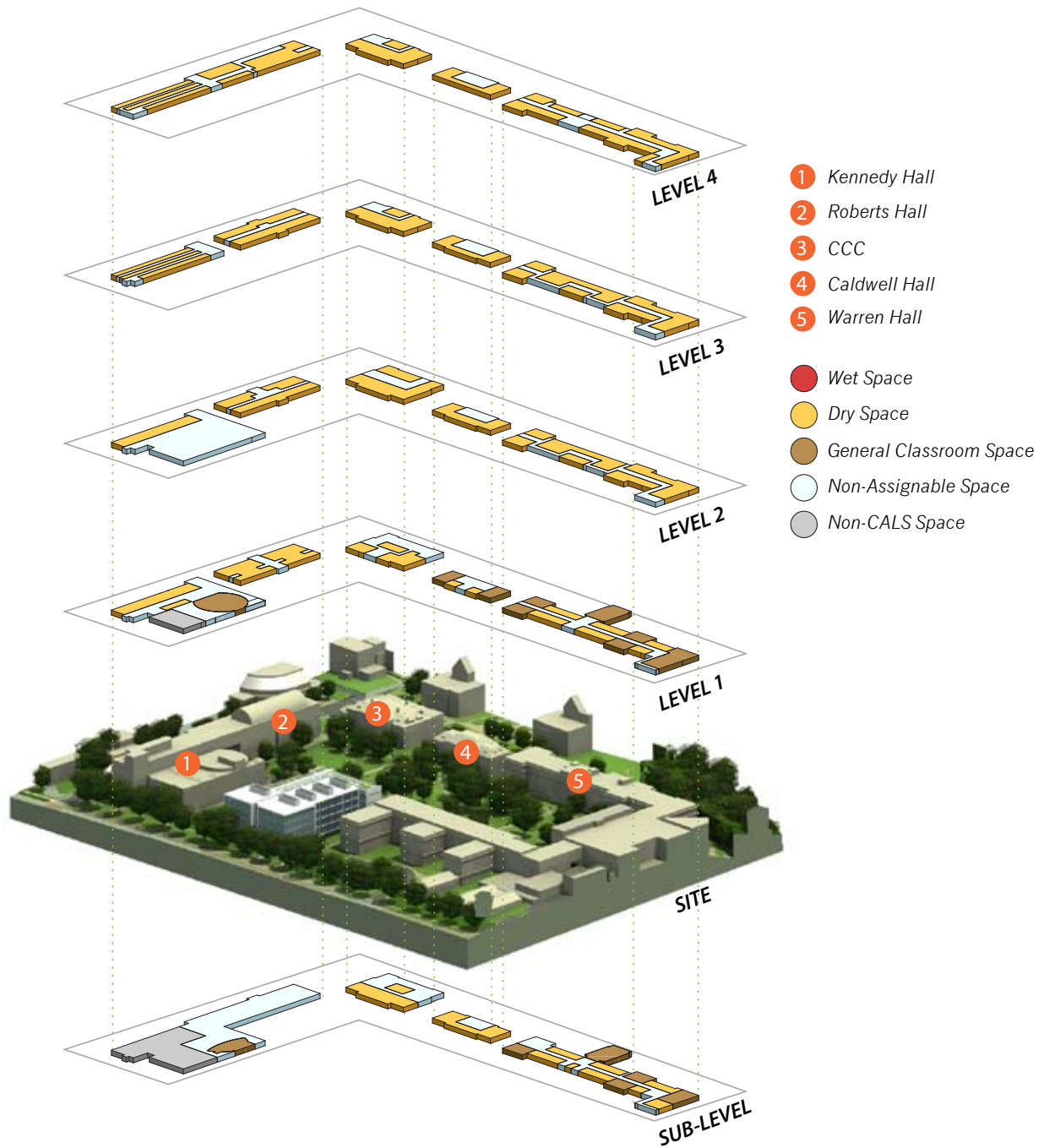


Figure 5.3: Economic & Community Vitality axonometric of programming for levels 1 - 4 and “sub-level”

## Facilities Programming

### 1 Kennedy Hall

- college teaching space 1|sub-level
- academic department space 1|2|3|4
- food services 1|sub-level

### 2 Roberts Hall

- central college administrative space 1|2|3
- teaching lab allocated to office space 4

### 3 CCC

- central college administrative space  
1|2|3|4|sub-level

### 4 Caldwell Hall

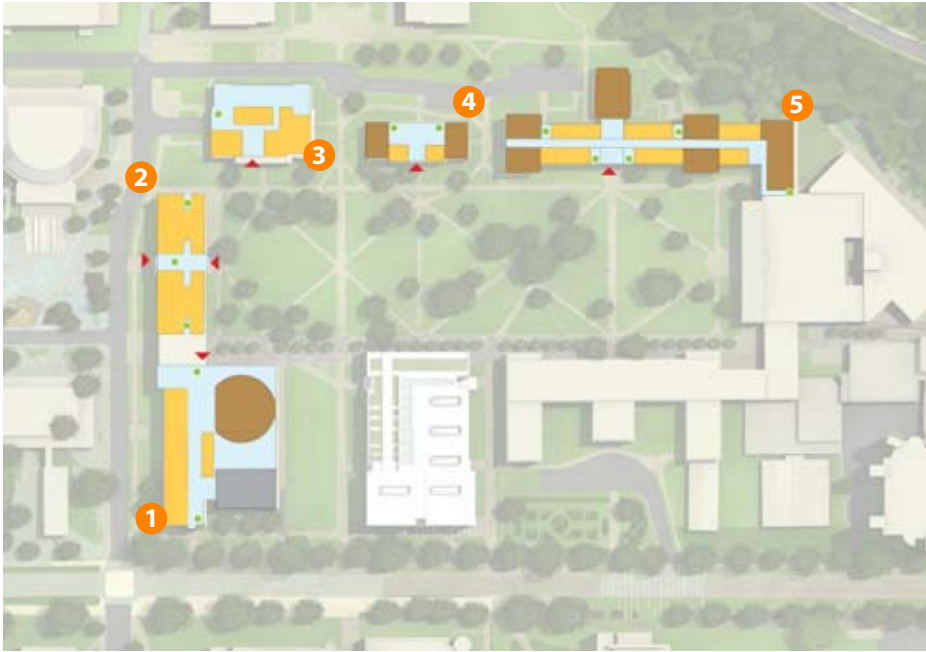
- college teaching space 1|sub-level
- Economic & Community Vitality program  
dry research space 1|2|3|4|sub-level

### 5 Warren Hall

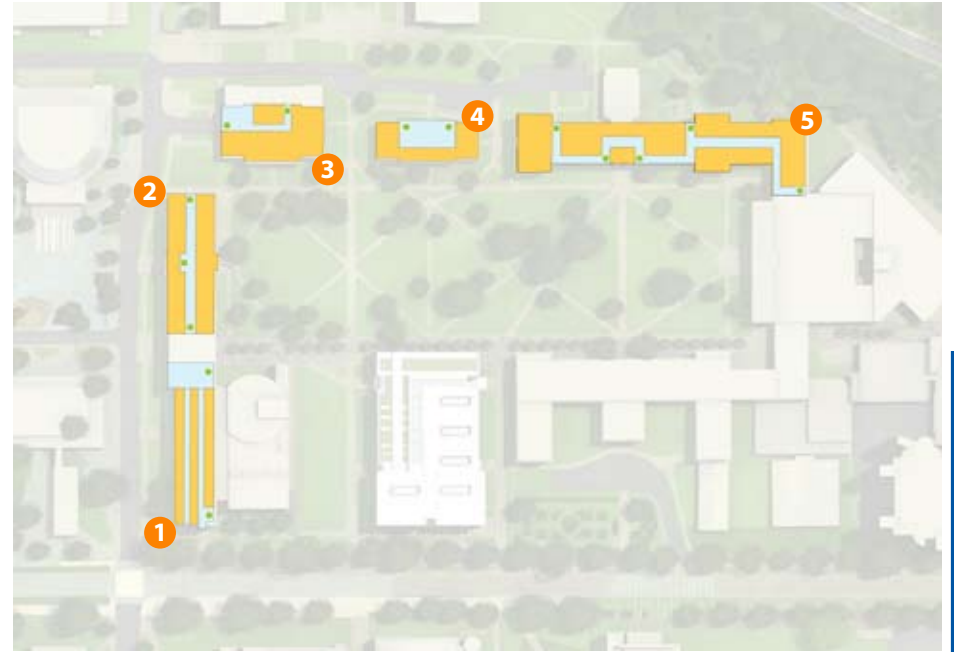
- college teaching space 1|2|3|sub-level
- academic department space 1|2|3|4|sub-level



Facility use diagram: Sub-level programming



Facility use diagram: Level 1 programming



Facility use diagram: Level 3 programming



Facility use diagram: Level 2 programming



Facility use diagram: Level 4 programming

### 5.3.3 Environmental Sciences

For disciplines with a focus on public stewardship of resources, suitable space is required that will:

- **Provide appropriate settings for undergraduate science courses.** These settings include classroom space with multimedia capabilities, wet and dry teaching laboratories, field material processing and storage facilities, design studios and student project space.
- **Provide adaptable and flexible wet and dry bench laboratory space with related support space.** New laboratory space will provide the environmental sciences theme area with an opportunity to accommodate multidisciplinary collaborative research projects.
- **Provide office space to house graduate students, and academic and administrative staff.**
- **Provide settings that support the College's mandate for public service in extension and outreach activities.**

This space plan builds new capacity in a key College academic priority area and establishes a focus for environmental sciences research at CALS/Cornell. It provides the opportunity to bring together research groups from different departments (and Colleges) that can benefit from close proximity with access to shared research support facilities and services, reinforcing the trends in laboratory design and space management already in place at CALS and Cornell. The plan complements the proposed investments in upgrades to Fernow Hall and Rice Hall and potentially utilizes a development site on land currently occupied by Bruckner, Poultry Houses and Little Rice.

#### Lead departments

- Biological and Environmental Engineering
- Ecology and Evolutionary Biology
- Landscape Architecture
- Microbiology
- Natural Resources

## Key Initiatives

**Comprehensive renovation, expansion and restoration of Fernow Hall and Rice Hall.** These renovation projects will provide classroom and meeting space; office space for faculty, staff and graduate students; department administrative office space; project space for undergraduate students; and informal study and social space. They will address critical building condition and fit-to-function issues through reprogramming for uses that benefit from building floorplate configuration, and replacing wet laboratory uses with dry uses.

The restoration scope will address the façade and historic interior spaces and will upgrade interior spaces to current standards for building systems, IT infrastructure and furnishings. As both Fernow and Rice Halls are on the National Register of Historic Places, care should be taken to minimize impacts on their heritage attributes. The Fernow Hall project is funded through the current capital plan. The Rice Hall project is currently identified for inclusion in future capital plans.

**Creation of a new Environmental Science teaching and research facility.** This project will create a new campus hub for environmental sciences with a new teaching and laboratory space. Two optional sites for the building are considered. The first is a site overlooking Cornell Plantations contiguous to Fernow Hall and the second is a site south of Tower Road. (See Section 8.1.2 for a detailed description of this initiative).





**Comprehensive facilities renewal program of other space accommodating Environmental Sciences program activity.** Investment will be required to sustain the capacity of other College spaces and to accommodate evolving laboratory technologies and practices. Elements will include phased upgrades to Bradfield Hall and Emerson Hall and will address building fabric and systems deficiencies.

**Decommissioning and demolition of sub-standard buildings.** Bruckner, Poultry Houses and Little Rice cannot provide suitable long-term accommodation for academic departments for a combination of several reasons: small floor plates and overall scale that creates inefficient accommodation, building fabric that cannot be upgraded to a suitable standard, and locations that mitigate against achieving highest and best use of prime development sites.

## Space Requirements and Inventory Details

Space Category	Area (NASF)
Common College teaching space	15,798
<b>Academic Department Space</b>	
Instructional labs and support space	9,540
Research	96,366
Academic office space	38,341
Academic dept. administrative space	14,015
Other space	2,003
<i>Sub-total (NASF)</i>	<i>160,265</i>
<b>Total Area (NASF)</b>	<b>176,063</b>

Table 5.5: Space Requirements

<b>Stable</b>	
(normal maintenance only)	
<b>Phased Renewal</b>	
(incremental upgrades to systems & fittings required to meet changing accommodation standards - primarily in laboratory and lab support areas)	
<b>Complete Renewal</b>	
(single stage redevelopment)	
<b>New Construction</b>	

Building	CALS Teaching Space	Academic Department Space	College Administrative Space	Other Programs Space	Total CALS Space	Non CALS Space	Total Space (NASF)
1028B Bradfield Hall	3,483	56,610	-	-	60,093	-	60,093
1028E Emerson Hall	-	30,043	-	-	30,043	-	30,043
1029 Fernow Hall	1,597	15,549	-	-	17,146	-	17,146
1040 Rice Hall	-	8,870	3,049	5,356	17,275	-	17,275
<i>Sub-total</i>	<i>5,080</i>	<i>111,072</i>	<i>3,049</i>	<i>5,356</i>	<i>124,557</i>	<i>-</i>	<i>124,557</i>
New ES Teaching and Research Facility	10,718	78,525	-	-	89,243	-	89,243
<b>Total Area (NASF)</b>	<b>15,798</b>	<b>151,860</b>	<b>3,049</b>	<b>5,356</b>	<b>176,063</b>	<b>-</b>	<b>176,063</b>
<b>Decommissioned Space</b>							
1031F Poultry House	-	1,946	-	-	1,946	-	1,946
1031G Poultry House	-	1,915	-	-	1,915	-	1,915
1036 Little Rice	-	1,836	-	-	1,836	-	1,836
1070 Bruckner Lab	-	11,330	-	-	11,330	-	11,330
<b>Total (NASF)</b>	<b>-</b>	<b>17,027</b>	<b>-</b>	<b>-</b>	<b>17,027</b>	<b>-</b>	<b>17,027</b>

Table 5.6: Planned Space Inventory

**Notes: Space allocated in Bradfield Hall is part of the total assignable space. The balance is allocated to the Life Sciences discipline area.**

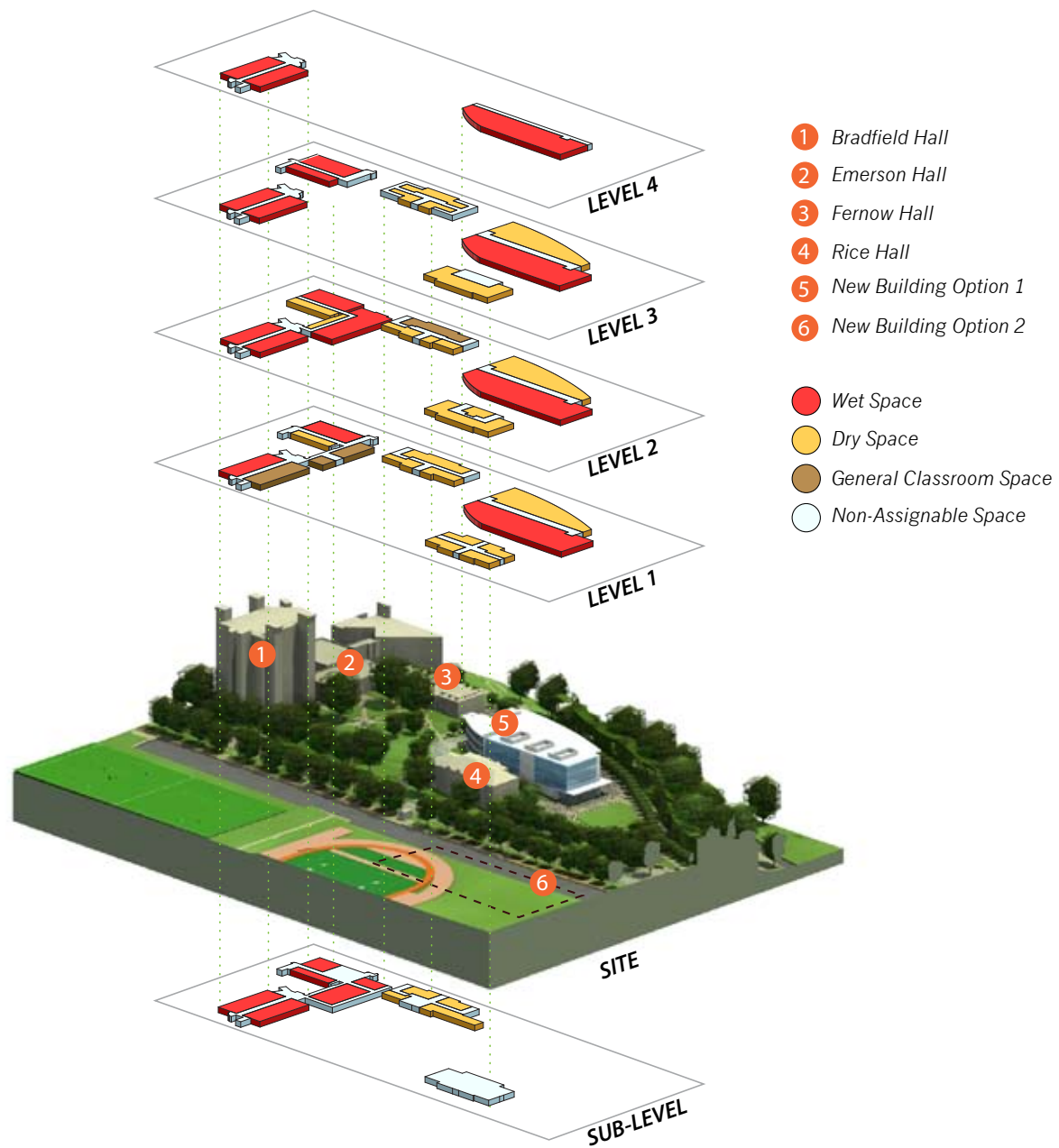
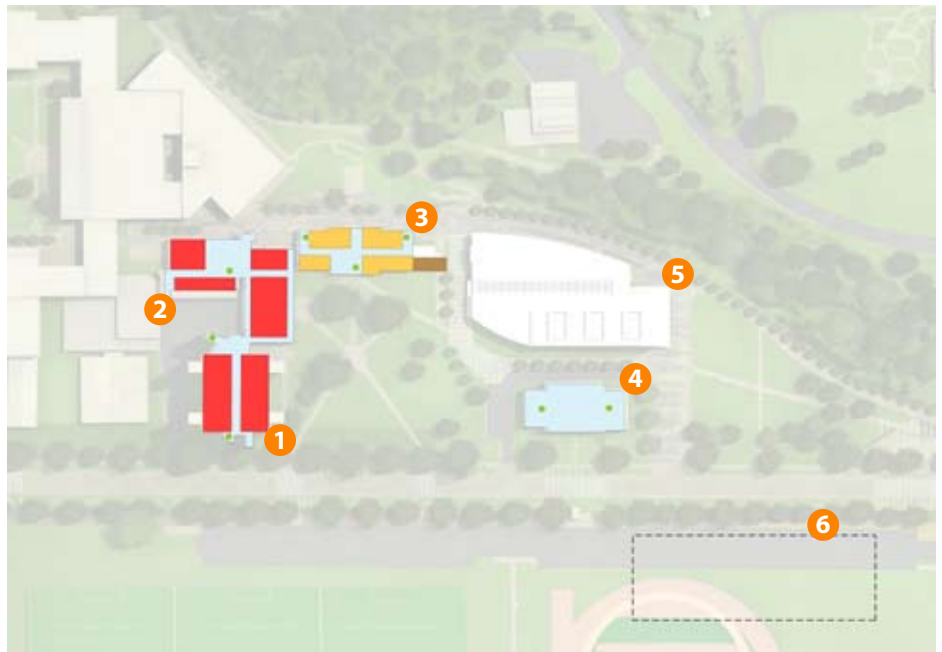


Figure 5.4: Environmental Sciences axonometric of programming for levels 1 - 4 and “sub-level”

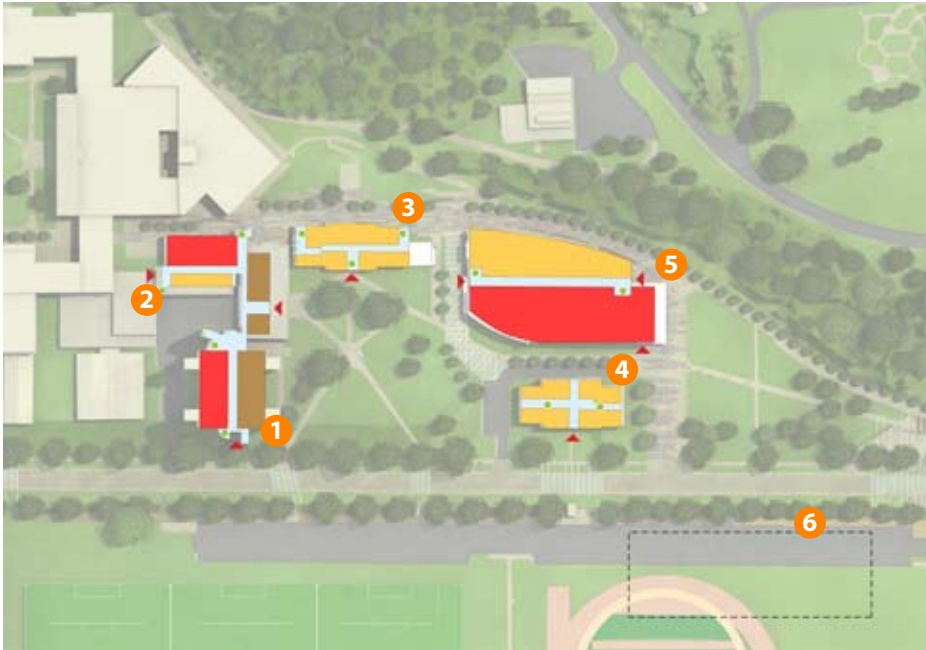
## Facilities Programming

- 1 Bradfield Hall \***
  - college teaching space 1|3
  - academic department space 1|2|3|4|sub-level
- 2 Emerson Hall**
  - college teaching space 1|3
  - academic department space 1|2|3|sub-level
- 3 Fernow Hall**
  - college teaching space 2
  - academic office space 1|2|3|sub-level
- 4 Rice Hall**
  - academic office space 1|2|3
- 5 Future Environmental Sciences development site 1**
- 6 Future Environmental Sciences development site 2**

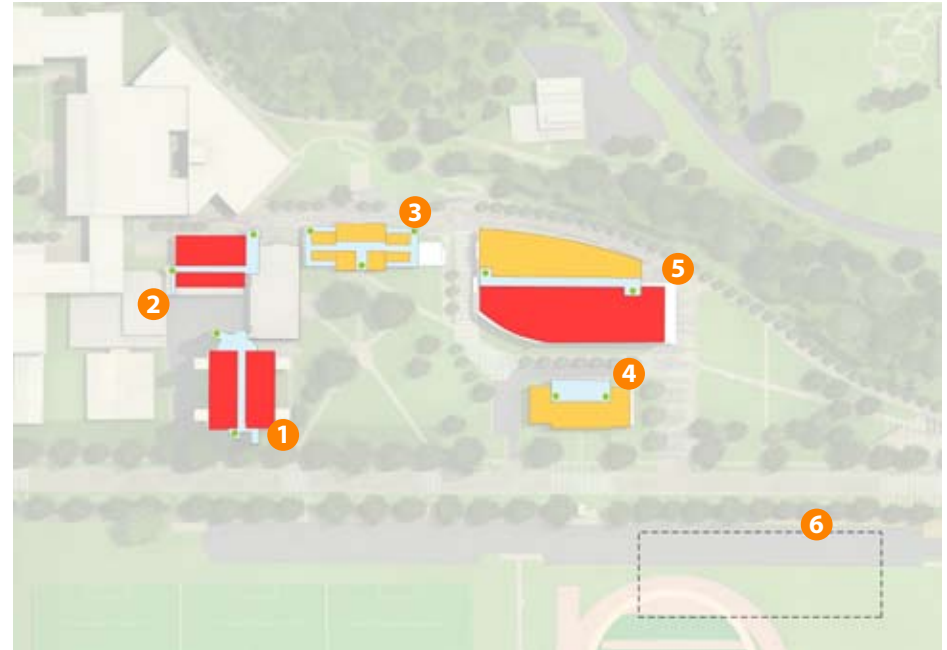
\* This facility is shared with the Life Sciences discipline area (see section 5.3.1).



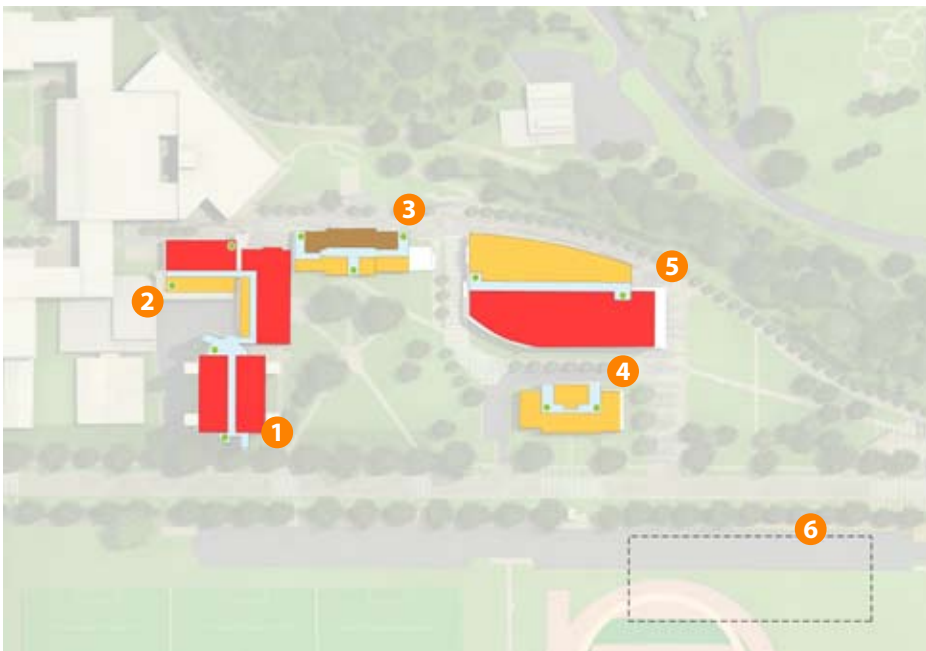
Facility use diagram: Sub-level programming



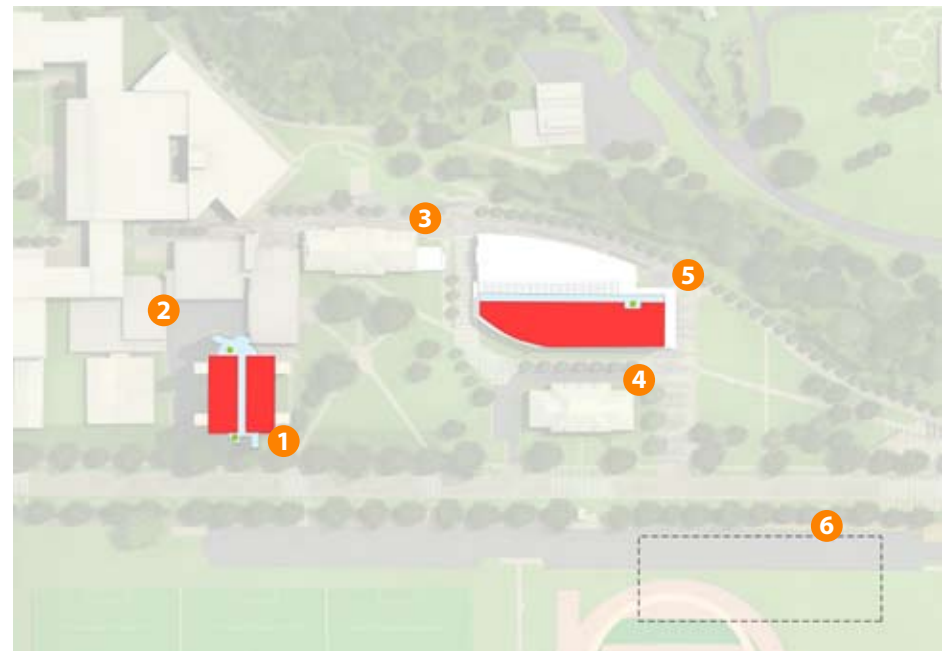
Facility use diagram: Level 1 programming



Facility use diagram: Level 3 programming



Facility use diagram: Level 2 programming



Facility use diagram: Level 4 programming (includes Level 5-11 for Bradfield Hall)

### 5.3.4 Food & Energy Systems (Ithaca)

For disciplines that range over a wide array of areas related to applied agriculture and food production, suitable space will:

- **Provide appropriate settings for undergraduate education.** This includes suitable classroom space with multimedia capabilities, undergraduate teaching laboratories and space for self-directed project and research activities.
- **Provide high quality research laboratories and support spaces.** The range of research project work included in this cluster can vary widely in the type of space required. Space types include wet and dry bench spaces, high-bay space that provides workshop environments to accommodate simulation and pilot plant installations, and special uses such as the existing dairy plant. Many of these facilities have particular servicing requirements.
- **Provide office space to house graduate students, and academic and administrative staff.**
- **Create settings that support the College's mandate in extension and outreach activities,** a very significant focus of this theme area.

The space plan reinforces the focus on Food & Energy Systems at CALS and brings together research groups from different departments (and colleges) that can benefit from close proximity with access to shared research support facilities and services, reinforcing the trends in laboratory design and space management already in place at CALS and Cornell.

The space plan builds capacity in research infrastructure for Food & Energy Systems by leveraging the College's investment in the Stocking Hall renovation and restoration project and addressing functionality issues within Wing Hall and Morrison Hall. It also utilizes new development sites created by the potential demolition of Livestock Pavilion and Wing Hall Wing. Long-term deferred maintenance is reduced by choosing to divest of Riley-Robb Hall and portions of Morrison Hall.

#### Lead departments

- Animal Science
- Crop and Soil Sciences
- Food Science
- Horticulture
- Plant Breeding and Genetics

#### Key Initiatives

##### **Completion of the Stocking Hall Rehabilitation and Addition Project.**

**Restoration, renovation and rehabilitation of Wing Hall.** This renovation project will address critical building condition and fit-to-function issues. Wing Hall will be reprogrammed for dry uses to provide classroom and meeting space, office space for faculty, staff and graduate students and informal study and social space. The restoration scope will address the façade and public spaces and will upgrade interior spaces to current standards for building systems, IT infrastructure and furnishings. As Wing Hall is on the National Register of Historic

Places, care should be taken to minimize impacts on its heritage attributes.

**Relocation of the Livestock Pavilion and the Large Animal Research and Teaching Unit to the Large Animal Teaching Complex on Route 366 (see section 7.2.1).**

**Creation of a new Food & Energy Systems teaching and research facility.** This project will see the construction of a new laboratory and workshop building, programmed and designed to meet the future needs of Food & Energy Systems disciplines. Two options for creating this new facility can be considered. The first includes a new laboratory and workshop block on the site of the existing Wing Hall Wing and the Livestock Pavilion, which are recommended for demolition. This option would see the new structure integrated with the restoration project for Wing Hall and the decommissioning of Riley-Robb Hall and the single-storey portions of Morrison Hall. The second option includes the development of a new laboratory and workshop block integrated with a renovation/expansion of Morrison Hall. In this option, only Riley-Robb Hall would be decommissioned.

Selection of the best course of action will depend on a more detailed analysis of the program requirements, the state of repair of the existing buildings and the relative costs of renovation versus new construction of equivalent building areas.

**Renovation and upgrade of Morrison Hall.** The fit-to-function analysis identified limits to the suitability of Morrison Hall to house state-of-the-art research space. Preliminary assessment suggests that the degree of renovation required to create wet laboratory space would not be cost effective nor would it be possible to provide the full range of space types that Food & Energy Systems require. Renovation to provide lightly serviced space suitable for uses as classrooms and offices is proposed for Morrison Hall.

The project scope for the creation of a new teaching and research facility (option 2) sees the decommissioning and demolition of the single storey wings of Morrison Hall to provide a suitable site for the new laboratory and workshop block.

**Strategic renewal of Teaching and Research Center Harford facilities.** This countryside initiative is programmatically tied to the Food & Energy Systems (see section 7.2.6).





**Comprehensive facilities renewal program.** A renewal program that focuses on the College's existing program space allocated to Food & Energy Systems. The Stocking Hall project will address a significant portion of the deferred maintenance and quality deficits in this discipline area. The proposed restoration of Wing Hall will address that building's deferred maintenance issues.

**Decommissioning and demolition of sub-standard buildings.** Wing Hall Wing, Riley Robb Hall, the single-storey portions of Morrison Hall and the Livestock Pavilion cannot provide suitable long-term accommodation for academic departments for a combination of several reasons: small floor plate and overall scale that creates inefficient accommodation, building fabric that cannot be upgraded to a suitable standard, and locations that militate against achieving highest and best use of prime development sites.

## Space Requirements and Inventory Details

Space Category	Area (NASF)
Common College teaching space	15,798
<b>Academic Department Space</b>	
Instructional labs and support space	14,040
Research	115,419
Academic office space	45,858
Academic dept. administrative space	19,500
Food lab/Dairy Plant	24,500
Other space	1,992
<i>Sub-total (NASF)</i>	<i>221,309</i>
<b>Total Area (NASF)</b>	<b>237,107</b>

Table 5.7: Space Requirements

<b>Stable</b>	
(normal maintenance only)	
<b>Phased Renewal</b>	
(incremental upgrades to systems & fittings required to meet changing accommodation standards - primarily in laboratory and lab support areas)	
<b>Complete Renewal</b>	
(single stage redevelopment)	
<b>New Construction</b>	

Building	CALS Teaching Space	Academic Department Space	College Administrative Space	Other Programs Space	Total CALS Space	Non CALS Space	Total Space (NASF)
1041 Stocking Hall - NEW	6,330	62,469	-	-	68,799	-	68,799
1063 Food Science Lab NEW	-	24,500	-	-	24,500	-	24,500
1042A Wing Hall	-	12,722	-	-	12,722	-	12,722
1064 Morrison Hall	-	61,164	-	-	61,164	-	61,164
<i>Sub-total</i>	<i>6,330</i>	<i>160,855</i>	<i>-</i>	<i>-</i>	<i>167,185</i>	<i>-</i>	<i>167,185</i>
New A&FS Teaching and Research Facility	9,468	60,454	-	-	69,922	-	69,922
<b>Total Area (NASF)</b>	<b>15,798</b>	<b>221,309</b>	<b>-</b>	<b>-</b>	<b>237,107</b>	<b>-</b>	<b>237,107</b>
<b>Decommissioned Space</b>							
1042W Wing Hall Wing	-	20,004	-	-	20,004	-	20,004
1047 Surge Facility	-	782	4,642	-	5,424	-	5,424
1062 Riley Robb Hall	7,353	62,044	-	-	69,397	-	69,397
1064 Morrison Hall (partial)	2,565	9,103	-	-	11,668	-	11,668
<b>Total (NASF)</b>	<b>2,565</b>	<b>29,889</b>	<b>4,642</b>	<b>-</b>	<b>37,096</b>	<b>-</b>	<b>37,096</b>

Table 5.8: Planned Space Inventory

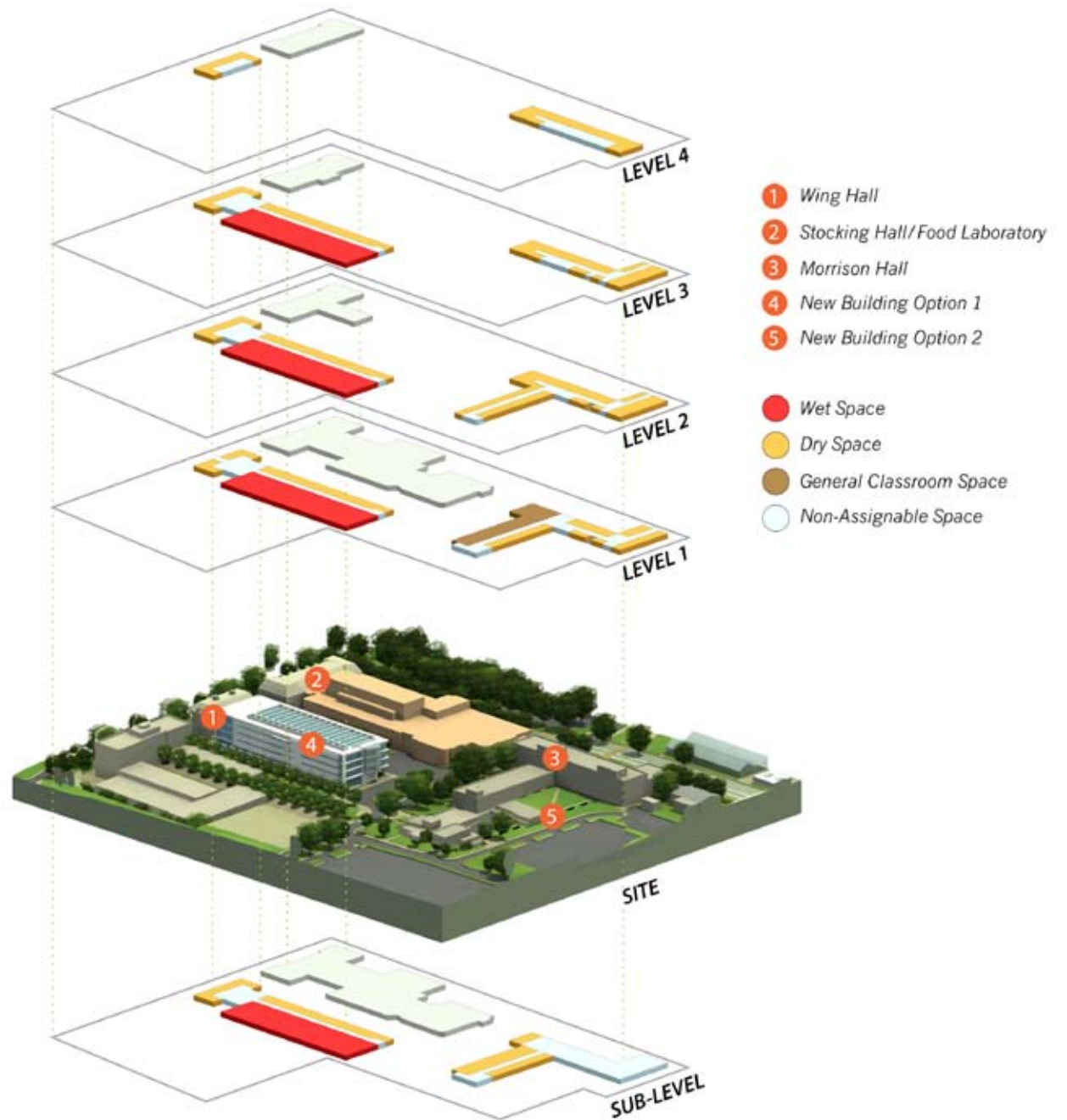


Figure 5.5: Food & Energy Systems axonometric of programming for levels 1 - 4 and “sub-level”

## Facilities Programming

### 1 Wing Hall

- college teaching space 1|2
- academic office space 1|2|3|4|sub-level
- teaching labs allocated to office space 1|2|3|sub-level

### 2 Stocking/Food Laboratory

- currently undergoing rehabilitation project 1|2|3|4|sub-level

### 3 Morrison Hall

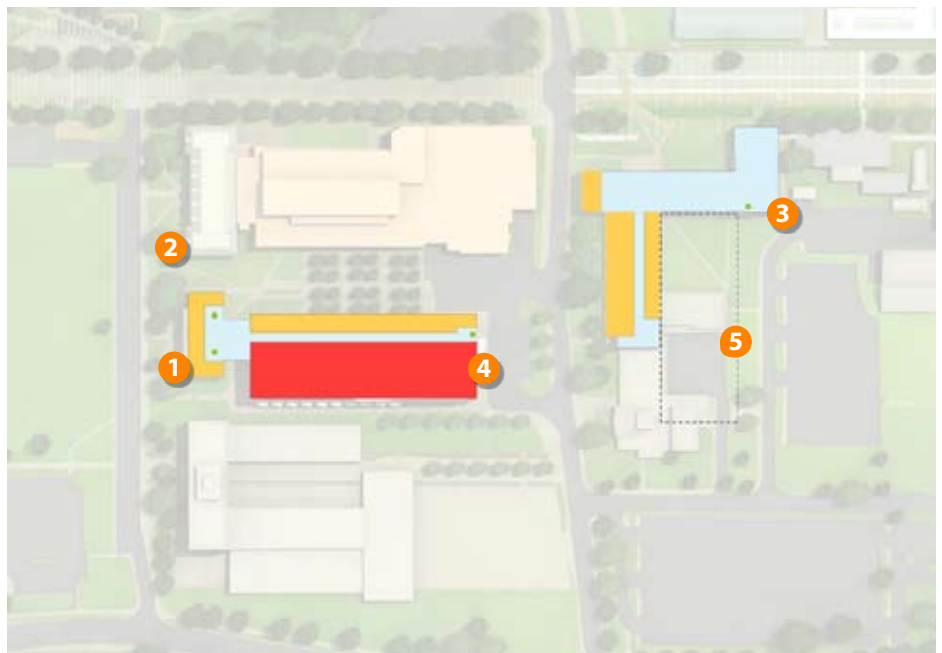
- college teaching 1|sub-level
- academic department space 1|2|3|4|sub-level

### 4 Future Ag and Food Systems development site 1

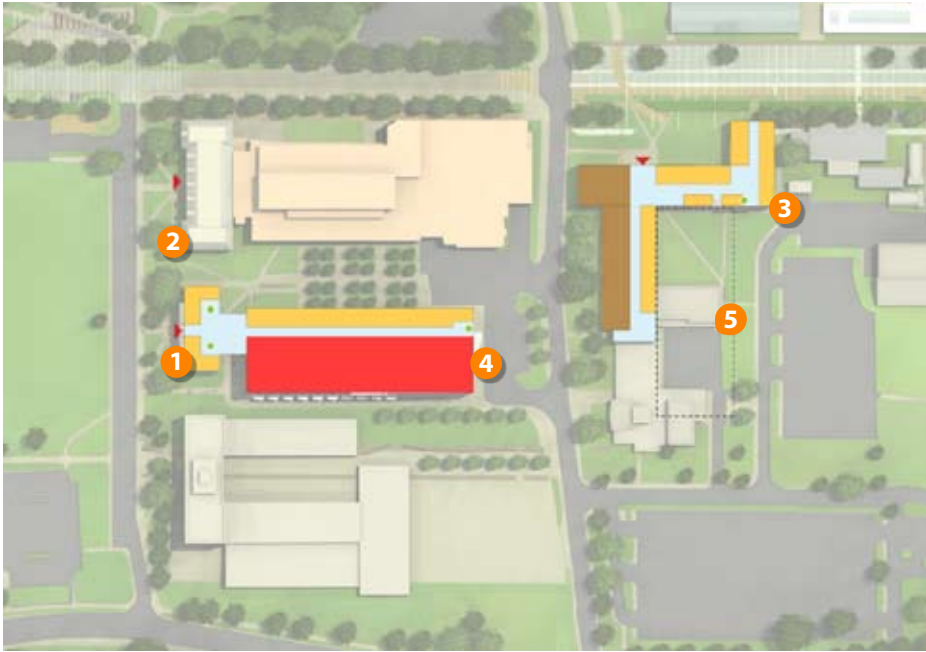
### 5 Future Ag and Food Systems development site 2

#### Legend

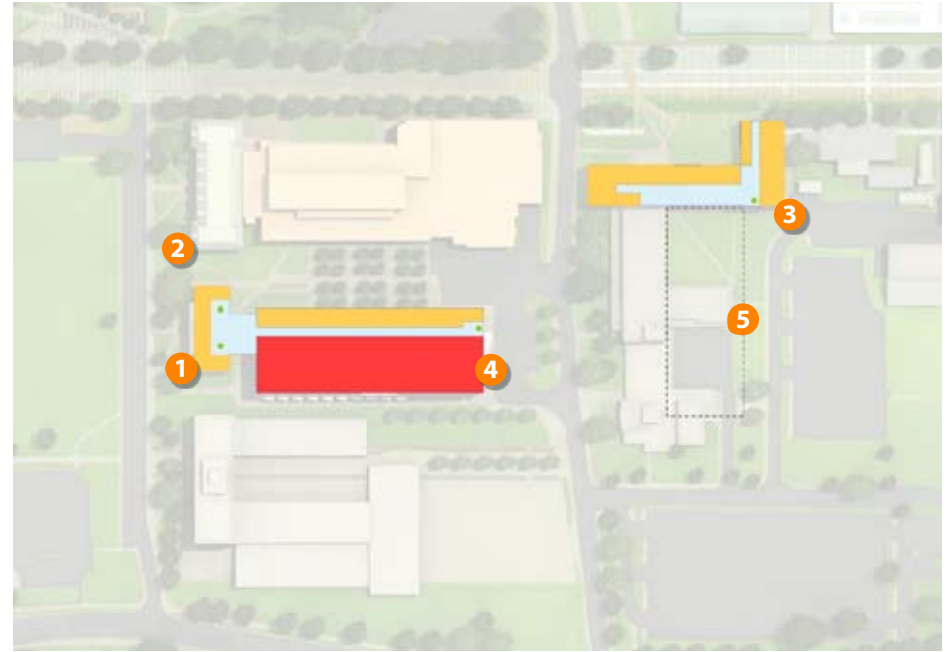
- Primary Corridor
- Vertical Circulation
- ▶ Main Entrance
- Wet Space
- Dry Space
- General Classroom Space
- Non-Assignable CALS Space



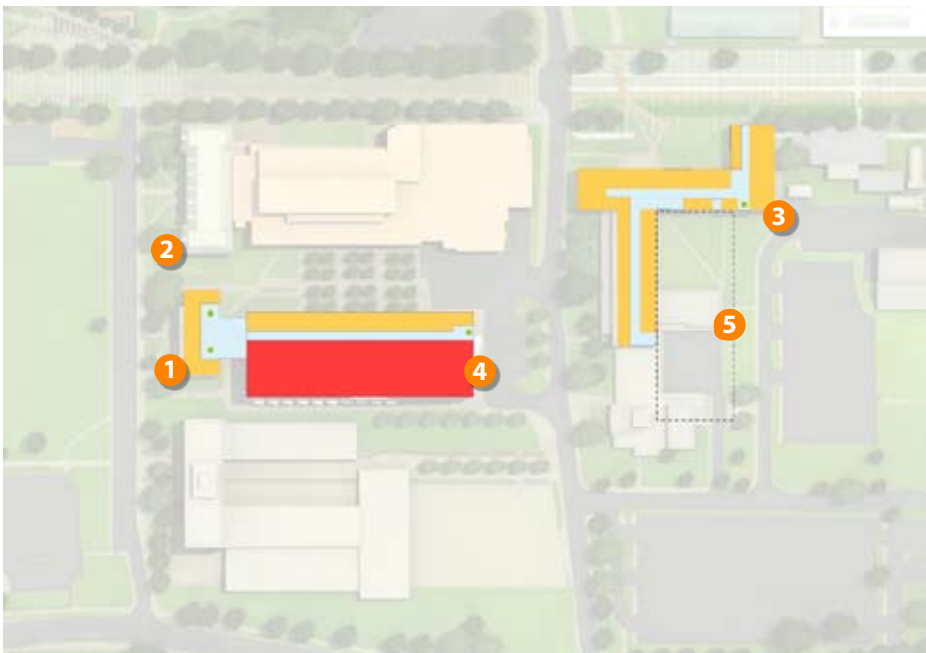
Facility use diagram: Sub-level programming



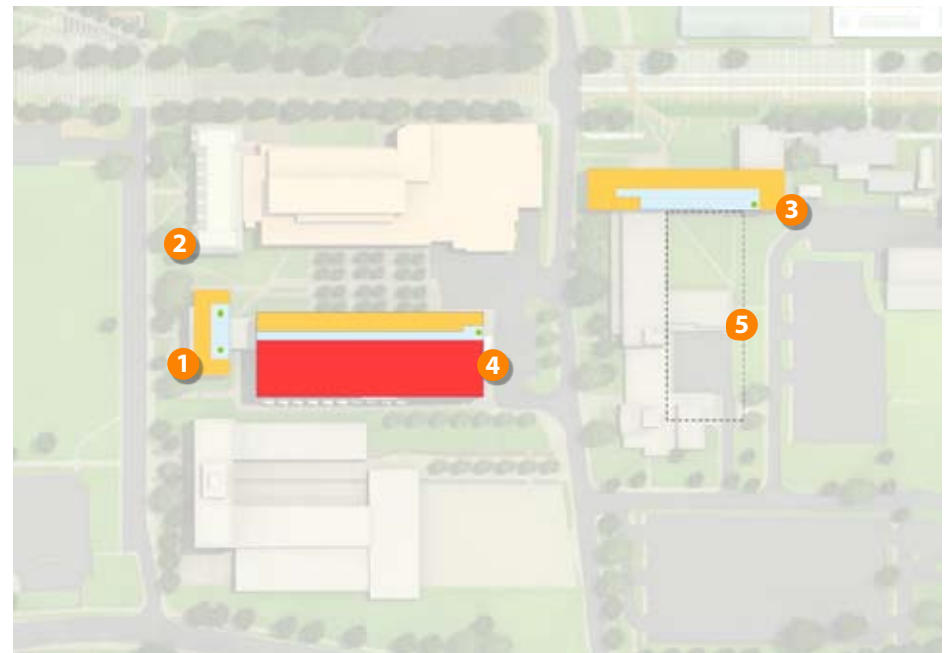
Facility use diagram: Level 1 programming



Facility use diagram: Level 3 programming



Facility use diagram: Level 2 programming



Facility use diagram: Level 4 programming

### 5.3.5 NYSAES Geneva Academic Departments & Administrative Units

In terms of overall campus development, a physical structure plan has been established to coordinate the evolution of open space and landscape development. It identifies two long-term potential development sites for laboratory space and two development sites for greenhouse renewal and expansion (see figure 5.6). The near term evolution of NYSAES Geneva will focus on the decommissioning of structures that are no longer usable.

With the proposed investment in the Agriculture Sciences building project at NYSAES Geneva, further investment in laboratory and office facilities can be expected to occur late within the planning horizon of the FMP. The implementation of the Agricultural Sciences Research Lab project will begin to address research space issues at NYSAES Geneva. However, significant deferred maintenance and research space quality issues will remain in Hedrick and Sturdevant Halls other strategic initiatives can be explored. Such initiatives could include expansion of the Surge Lab facility and/or relocation of some research programs to the Ithaca Campus.

Those departments housed in Barton Laboratory have less pressing immediate issues but, over the life of the planning period, upgrades to their accommodation will be required to keep pace with evolving program needs and research practices.

#### **Academic Department Space**

For disciplines that range over a wide array of areas related to applied agriculture and food production, suitable space will:

- Provide high quality wet environment research laboratories and laboratory support spaces as well as workshop space to accommodate large-scale simulation and pilot plan equipment.
- Provide office space to house graduate students, and academic and administrative staff.
- Create settings that support the College's mandate in extension and outreach activities.

#### **Academic departments include:**

- Entomology
- Food Science
- Horticulture
- Plant Pathology and Plant-Microbe Biology

#### **Administrative, Library and Other Support Services Space**

For these activities, continued upgrades to existing space will be required. Particular focus is required on upgrading public assembly spaces with multi-media capabilities, refurbishing library, study and social spaces.

## Key Initiatives

**Agricultural Science Renovation Project.** The proposed renovation of the Food Research Lab building will provide flexible wet laboratory and lab support space for Geneva academic departments.

This project will reinforce the trends in laboratory design and space management which bring together research groups from different departments that benefit from close proximity, with access to shared research support facilities and services. The Agricultural Sciences Research Lab project will renew a building providing the potential to accommodate a wide range of research programs across the four departments located at NYSAES Geneva.

**Facilities renewal program to address Barton Laboratory.** Over the 20 year lifetime of the FMP, investments will be required to upgrade the quality of the laboratory and office spaces in this building

## Long-term Planning Directions

**New research facility (long-term).** Construction of a new laboratory building located adjacent to or on the site of Hedrick and Sturtevant Halls or immediately south of Collier Drive on the current site of the Utility Storage Barn. This project protects a new development site in the heart of the campus suitable for constructing new laboratory space, adjacent to greenhouse facilities and the other two major campus laboratory facilities. This new facility will be programmed and designed to provide state-of-the-art research space. Implementation of this project will build capacity in research infrastructure for Food & Energy Systems disciplines.






This project can also address functionality issues identified in the analysis of the quality of Hedrick and Sturtevant Halls. The Geneva space assessment indicates an overall surplus of space; however, space in Hedrick and Sturtevant Halls cannot meet current research space standards. In the

long-term, a combination of building renewal and new research space will be required to decant laboratory uses from Hedrick and Sturtevant Halls. Subject to further assessment, the project could incorporate portions of the existing structures that would accommodate office and related uses, complementary to the laboratory facilities in the new structure.

## Space Requirements

Space Category	Total (NASF)
College Administrative Units	8,100
Event/Exhibition Space	4,850
<i>Sub-total (NASF)</i>	<i>12,950</i>
<b>Academic Department Field Support</b>	
Research	78,283
Academic office space	17,677
Academic department administrative space	6,733
Resource collections	220
Other space	880
<i>Sub-total (NASF)</i>	<i>103,793</i>
<b>Total Area (NASF)</b>	<b>116,743</b>

Table 5.9 Space Requirements

<b>Stable</b>	
(normal maintenance only)	
<b>Phased Renewal</b>	
(incremental upgrades to systems & fittings required to meet changing accommodation standards - primarily in laboratory and lab support areas)	
<b>Complete Renewal</b>	
(single stage redevelopment)	
<b>New Construction</b>	
<b>Long-term Renewal/Redevelopment</b>	

## Total Space Available<sup>1</sup>

Building	CALS Teaching Space	Academic Department Space	College Administrative Space	Other Programs Space	Total CALS Space	Non CALS Space	Total Space (NASF)
Jordan Hall	-	-	9,654	-	9,654	-	9,654
Agricultural Sciences Research Laboratory <sup>2</sup>	-	47,048	1,157	-	48,205	-	48,205
Barton Laboratory	-	43,319	1,736	-	45,055	-	45,055
Hedrick Hall <sup>3</sup>	-	14,513	-	-	14,513	-	14,513
Sturtevant Hall <sup>3</sup>	-	11,682	-	-	11,682	-	11,682
<b>Total Area (NASF)</b>	<b>-</b>	<b>116,562</b>	<b>12,547</b>	<b>-</b>	<b>129,109</b>	<b>-</b>	<b>129,109</b>
<b>Decommissioned Space</b>							
4914 Utility Storage Barn	-	-	-	17,401	17,401	-	17,401

Table 5.10: Planned Space Inventory

### Notes:

- <sup>1</sup> The Surge Lab offers 7,101 NASF of temporary accommodation for research and office activities when their current locations must be taken offline to undergo renovation/upgrade. The building is temporary in nature and its service life as a laboratory facility is uncertain. Therefore it is not included in the planned space inventory.
- <sup>2</sup> The renovated Agricultural Sciences Research Lab will also house the NYSAES - Geneva Information Technologies Group (887 sf) and Environmental Health (270 sf).
- <sup>3</sup> Although currently in use, all space in Hedrick and Sturtevant Halls is below standard and these buildings lack the flexibility to be renovated to accommodate modern laboratory functions. A combination of building renewal and new space will be required.

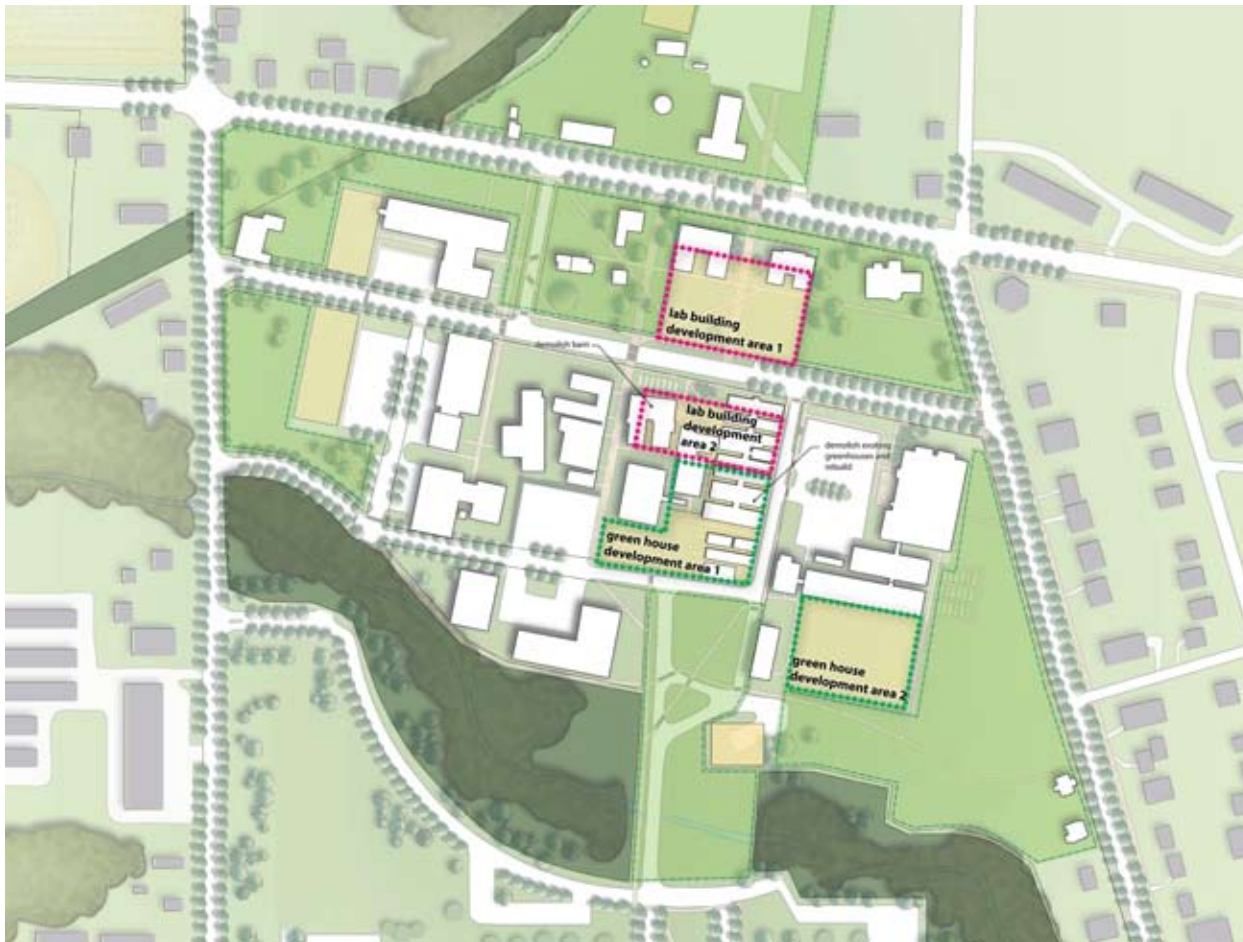


Figure 5.6: Development framework for NYSAES Geneva





# 6 Greenhouse Renewal

This chapter outlines the renewal strategy for CALS' greenhouses on the Ithaca and Geneva campuses.

- 
- 6.1 Greenhouse Planning Objectives
  - 6.2 Ithaca Greenhouses
  - 6.3 NYSAES Geneva Greenhouses

## | 6.1 Greenhouse Planning Objectives

The quality and functionality of CALS' greenhouse facilities are significantly compromised. The building condition assessment study has identified more than half of the greenhouse facilities (by floor area) as priorities for investment or divestment. This critical need for investment is due to both extensive physical deterioration of the building fabric as well as facility obsolescence, where the configuration of the greenhouse structures and building systems do not meet contemporary research needs. For example, Most of Cornell's existing greenhouse structures are of insufficient height to allow efficient use of plant growth lighting or installation of heat retention curtains, preventing implementation of significant energy efficiency measures.

To carry out its academic mission, CALS requires modern greenhouses facilities that are in keeping with contemporary standards. In the long term, this need will be addressed through the complete renewal of CALS' greenhouse facilities in both Ithaca and Geneva. At the time of development, detailed phasing and surging strategies will be required as greenhouses renewal will primarily occur

on existing greenhouse sites. To assist with this, a CALS greenhouse prototype is currently under design development, which has the potential to guide all new greenhouse developments.

Due to the highly specific nature, scale and use of greenhouse space, generous sized sites should be reserved for the renewal and growth of greenhouse facilities at CALS. Unlike other building sites, which can accommodate a wide range of potential building forms and functions, sites identified for greenhouse facilities must be protected to provide for expansion in locations that are proximate to academic activities. Teaching greenhouses are inextricably tied to classrooms and laboratories. Research greenhouses and support structures can be located at a somewhat greater distance from Core Campus, but often require integrated greenhouse, laboratory, prep and growth chamber space for effective transport and study of plant materials. Although there may not be pressing need for all potential greenhouse sites identified today, reserving appropriate sites for the future is prudent given their scale and complex location and site design requirements.

### **Greenhouse Planning Objectives**

The following planning objectives, which are embedded in the principles of the FMP, provide guidance for greenhouse renewal:

- Greenhouses are significant facilities that support research and teaching, and their convenient proximity to classrooms, offices and other College uses is a critical factor in their design and location.
- Greenhouses are a unique building type. They cannot be retrofitted for other uses, and if a controlled environment for larger scale plant growth is needed, no other space will do.
- It is desirable to have a critical mass of connected greenhouses in a single location, supported by a shared head-house containing office, lab and mechanical infrastructure.
- Greenhouses are space intensive. Although they must be proximate to College uses, too central a location will displace other uses and disrupt other critical adjacencies.
- Greenhouse development standards are increasing in size, both in floorplate dimensions and building height.

## | 6.2 Ithaca Greenhouses

Three areas have been identified for large-scale greenhouse renewal and expansion on the Ithaca Campus, as illustrated on figure 6.1.

- **Area 1** includes the existing Kenneth Post laboratory and related greenhouse facilities on Tower Road. This area is a priority for renewal given current building conditions and configurations as well as the opportunity for proximate research and instructional facilities. It will require complete replacement and will see the relocation of non-greenhouse-related uses.
- **Area 2** includes the Guterman laboratory and associated greenhouse facilities, which has opportunities for renewal of some facilities and expansion. Expansion of existing Guterman ranges will allow relocation of some Tower Road Greenhouses.
- **Area 3** is a long-term placeholder for future greenhouse needs. Farm Service utility buildings will require relocation to the Stevenson Road corridor.



Figure 6.1: Ithaca Campus Greenhouse Development Areas (outlined in orange)



**Figure 6.2: Potential Greenhouse Area 1 Layout**

### **Greenhouse Area 1**

This greenhouse cluster includes the existing Kenneth Post laboratory and related greenhouse facilities at the northwest corner of Tower Road and Judd Falls Road. Located near many of CALS' major academic buildings, it ensures accessible teaching greenhouse space. The campus master plan identified a series of development guidelines at this location that limit the location and intensity of development on this site. Further, grade restrictions limit the greenhouse redevelopment potential of this site. For these reasons, the planned greenhouse redevelopment site is smaller than the existing footprint of greenhouses and related facilities. However, more intensive development and modern greenhouse facilities will maximize use of the site.

Additional greenhouse-related facilities, including a headhouse for greenhouse operations and potential laboratory facilities can also be accommodated on the site to ensure efficient operations and co-location of related activities. Consolidating the greenhouses into one contiguous range and reducing the area devoted to service roads will also increase operational efficiency. Existing non-greenhouse operations and field support functions

will be relocated to areas of campus that can better accommodate such activities, including the area north of the Caldwell greenhouse complex.

Because of the demand for proximate teaching greenhouse facilities and tight clusters of greenhouses, laboratories and growth chambers, this site should be reserved for greenhouse and related use. This recommendation departs from the use for this site proposed in the campus master plan.

With proximity to other campus buildings and activities, instructional use will continue to be a significant activity in these greenhouses, though research activities may be accommodated where necessary. Due to continued demand for teaching greenhouses close-in to CALS academic facilities, renewal of this site is a high priority within the program of greenhouse renewal. Construction of additional capacity in the Guterman Greenhouse complex (Greenhouse Area 2) will likely be required in advance of the renewal of this area.



Given the scale of greenhouse development proposed, the need for connection to a common head house, the clustering of existing uses and the irregular terrain of the western portions of the site, a wholesale demolition and/or relocation and rebuilding is recommended. However, funding streams and research needs will likely mean an incremental approach to renewal. A comprehensive relocation and development phasing strategy must be developed prior to renewal.

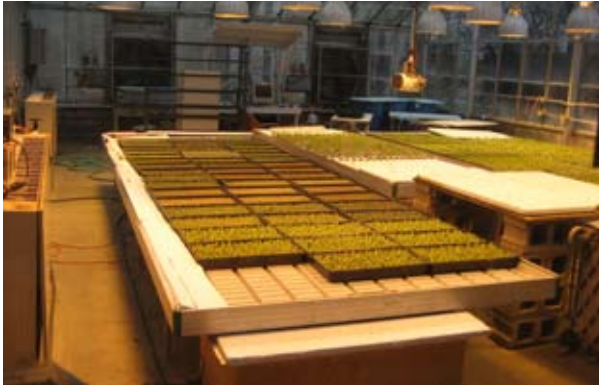


Figure 6.3: Greenhouse Development Area 1 along the Tower Road landscape initiative

Greenhouse Area 1 Decommissioning List		
Bldg #	Building Name	Area (NASF)
1045A	Kenneth Post Lab	6066
1045B	Green Greenhouse 1045B	6103
1045E	Green Greenhouse 1045E	5272
1045F	Green Greenhouse 1045F	3775
1045G	Green Greenhouse 1045G	6774
1045H	Green Greenhouse 1045H	1465
1045J	Green Greenhouse 1045J	1144
1045K	Green Greenhouse 1045K	1144
1045M	Green Greenhouse 1045M	5466
1045P	Green Greenhouse 1045P	5486
1060A	Yellow Greenhouse 1060A	3553
1060B	Yellow Greenhouse 1060B	1142
1060C	Yellow Greenhouse 1060C	3539
1060D	Yellow Greenhouse 1060D	7764
1060E	Yellow Shed 1060E	252
1060F	Dimock Envr. Control Lab	3643
1061A	Blue Greenhouse 1061A	1345
1061B	Blue Greenhouse 1061B	1927
1061C	Blue Greenhouse 1061C	3334
1061D	Blue Insectary – New	5226
1061E	Blauvelt Lab	868

1061F	Blue Insectary – Old	4043
1061G	Blue Shed East	100
1061H	Blue Greenhouse 1061H	1625
1061J	Blue MFG P Storage	181
1061L	Blue Shed West	88
1061M	Blue Soil Shed	168
1065	Blue Storage Shed	144
1066	Blue Pest Handling	308
1134A	Green Greenhouse 1134A	6342
1134B	Green Greenhouse 1134B	1087
1134D	Green MFG P Storage	126
1135A	Plant Virology – Nematology	4405
1135B	Yellow Greenhouse 1135B	2588
1135C	Yellow Greenhouse 1135C	2588
1136	Blue Garage – Old	2855
1137	Blue Garage – New	1818
<b>Total (NASF)</b>		<b>103,754</b>

Table 6.1: Ithaca Greenhouse Area 1 Decommissioning List



**Figure 6.4: Potential Greenhouse Area 2 Layout**

## Greenhouse Area 2

This greenhouse cluster includes the existing Guterman Greenhouse complex. Located at the edge of the Core Campus and adjacent to the countryside, as defined by the campus master plan, this site offers more flexibility for redevelopment and expansion of existing greenhouse facilities. Similar to Area 1, renewal in this location will offer opportunities for more intensive development that maximize use of the site.

The building condition assessment identifies the existing Guterman Bioclimatic Laboratory as being adequate, though capital investment will be required over time. This facility will continue to support greenhouse-related activities and could be expanded over time depending on need. Expansion of greenhouse facilities must be sensitive to two major factors. First, greenhouse facilities cannot compromise the historic Caldwell research fields to the north and east of the site. Expansion of greenhouses can only occur to immediate east and north. Second, greenhouse expansion to the north will require the relocation and/or replacement of the Caldwell Road Orange greenhouse range and Plant Breeding utility buildings.

Given the constraints in Greenhouse Area 1, greenhouse renewal should begin here to make room for greenhouse swing space. A number of structures must be decommissioned to facilitate the development of improved and expanded greenhouse facilities in Area 2 (see Table 6.2).



Greenhouse Area 2 Decommissioning List		
Bldg #	Building Name	Area (NASF)
1068B3	Red Greenhouse 1068B3	5,034
1068E	Red Greenhouse 1068E	219
1068F	Red Greenhouse 1068F	219
1068G	Red Greenhouse 1068G	219
1068H	Red Greenhouse 1068H	219
1068J	Red Greenhouse 1068J	219
1068K	Red Greenhouse 1068K	2,729
1910A	Orange Greenhouse 1910A	1,490
1910B	Plant Breeding Seed Storage	1,232
1913	Orange Greenhouse 1913	6,369
1914	Plant Breeding Quonset Hut	1,482
1915	Orange Greenhouse 1915	2,592
1916	Orange Greenhouse 1916	2,592
1917	Orange Greenhouse 1917	2,592
<b>Total Area (NASF)</b>		<b>27,207</b>

**Table 6.2: Ithaca Greenhouse Area 2 Decommissioning List**



**Figure 6.5: Potential Greenhouse Area 3 Layout**

### Greenhouse Area 3

This proposed greenhouse location is located southeast of the Guterman Greenhouse complex on the south side of Dryden Road/Route 366. This site is located in the countryside and identified for greenhouse expansion in the campus master plan. While not currently a priority for greenhouse expansion, the site should be protected for its long-term potential for large-scale greenhouse development beyond the 20-year planning horizon. A connected headhouse and associated laboratory and growth chamber space should be considered as part of this development project.

As the site is currently occupied by a variety of Farm Services utility structures, it is not currently available for greenhouse development. Over time, the Farm Services activities are recommended for relocation to the Stevenson Road Farm Services corridor as described below (see Table 6.3).

Greenhouse Area 3 Decommissioning List		
Bldg #	Building Name	Area (NASF)
1085A	Shop	12,092
1085B	Open Shed B	3,140
1085C	Open Shed C	6,280
1085D	Pole Barn	2,465
1085E	Pesticide Storage	177
<b>Total Area (NASF)</b>		<b>24,154</b>

**Table 6.3: Ithaca Greenhouse Area 3 Decommissioning List**

### Ithaca Greenhouse Renewal Strategy

#### Near-term (Step A)

Expand and renew the Guterman Greenhouse complex to the north and southeast. This will take advantage of capacity of the existing head-house and support infrastructure. Greenhouse expansion must not compromise the Caldwell Research Fields.

#### Near-term (Step B)

Demolish and replace the Tower Road Greenhouses with state-of-the-art facilities. This location is a priority for teaching greenhouses in order to be close to CALS classrooms and teaching laboratories, but it may also accommodate research greenhouses.

#### Long-term

The greenhouse area south of Dryden Road/Route 366 identified in the campus master plan will be required in the long term for additional greenhouse development. This site will accommodate capacity lost on the Tower Road site due to topographic constraints.

## 6.3 NYSAES Geneva Greenhouses

The Program Study to Replace Greenhouses (Enger Architectural Associates, 1999) identified a strategy for greenhouse renewal at NYSAES Geneva. This renewal strategy informed the planning directions outlined below. Two areas have been identified for large-scale greenhouse renewal at NYSAES Geneva, as illustrated on figure 6.5.

- **Area 1** includes the existing greenhouse cluster in the center of campus. Replacement of a number of greenhouse and related facilities will be required, though part of the existing greenhouse area may be reserved for long-term laboratory development.
- **Area 2** includes a southern expansion of the existing greenhouses south of Barton Laboratory and is a long-term placeholder for future greenhouse need.



Figure 6.6: NYSAES Geneva Greenhouse Development Areas



Figure 6.7: Potential Greenhouse Area 1 Layout

### Greenhouse Area 1

This greenhouse renewal area is located on the existing greenhouse cluster west of Barton Laboratory. The main greenhouse range in this area has been condemned and will be demolished in the near-term. Significant investment in greenhouse facilities is required to address building condition issues, and a comprehensive site plan for the renewal of this area should be developed.

Site design should seek to maximize greenhouse development potential while carefully integrating with the new Horticulture greenhouses, headhouse and site servicing. Greenhouse renewal should also consider integration with existing facilities and with a potential future laboratory building along Collier Road. A central headhouse should be located to provide service access from Castle Creek Drive.

Greenhouse Area 1 Decommissioning List		
Bldg #	Building Name	Area (NASF)
4910A	Main Greenhouse	4,936
4910A-01	Potting House	2,625
4910A-02	Greenhouses	4,066
4910A-03	Main Greenhouse "13"	4,028
4910G	Greenhouse P3	2,306
4910H	Greenhouse P1	985
4910J	Greenhouse P2	985
<b>Total Area (NASF)</b>		<b>19,931</b>

Table 6.4: Geneva Greenhouse Area 1 Decommissioning List



Figure 6.8: Potential Greenhouse Area 2 Layout

### Greenhouse Area 2

This greenhouse renewal area is located south of Barton Laboratory and the adjacent existing greenhouse range. This site offers a large area for greenhouse expansion that is unencumbered by existing facilities and/or uses. This site is not currently a priority for greenhouse expansion, but it should be protected for its long-term potential for large-scale greenhouse development beyond the 20-year planning horizon.

Site design should incorporate the existing greenhouse facilities to the north, but should allow for the eventual replacement of these facilities. Connectivity to Barton Laboratory should be maintained or enhanced. Headhouse functions and other shared activities and services should be designed in a central location for efficiency and service access to Castle Creek Drive.





# 7 Countryside Resources

This chapter outlines the planning directions for CALS' countryside resources, including seven study areas across Tompkins County and Geneva and the associated farms, yards and field stations.

- 
- 7.1 Land Base Assessment and Countryside Planning Objectives
  - 7.2 Tompkins County Countryside
  - 7.3 NYSAES Geneva Countryside

# 7.1 Land Base Assessment and Countryside Planning Objectives

With a state-wide mandate for teaching, research and extension, CALS has over 10,000 acres of land across New York State. This plan addresses CALS lands within Tompkins County and lands associated with NYSAES Geneva, including all lands in which CALS has an interest, either independently or jointly with the College of Veterinary Medicine.

One of the FMP goals was to identify utilization strategies and priorities for lands controlled by CALS with a focus on lands used to support academic and research functions (Chapter 1). This chapter provides specific direction for each of the study areas and the farms, yards and field stations within them, including lists of buildings and other facilities identified for decommissioning.

A qualitative assessment of the land-based fields and facilities was carried out through a series of site tours, interviews and strategic discussions with CALS administration and facility planning staff. Discussions were augmented by the building condition assessments, which provided input regarding the quality of the farms and research station facilities. For NYSAES Geneva facilities, a

campus planning workshop was also undertaken to consolidate and refine planning directions and assumptions.

Analysis of the use, character and location of CALS' countryside resources was carried out at two different scales. The first is at the scale of study areas, which capture nearly all of CALS lands in Tompkins County and Geneva. The study areas are a means to consolidate adjacent or nearby landholdings for planning purposes, and include facilities, farmed land, natural areas, infrastructure and other key features. A total of seven study areas have been identified, six of which are shown on Figure 7.1. The seventh study area includes the countryside lands surrounding NYSAES Geneva.

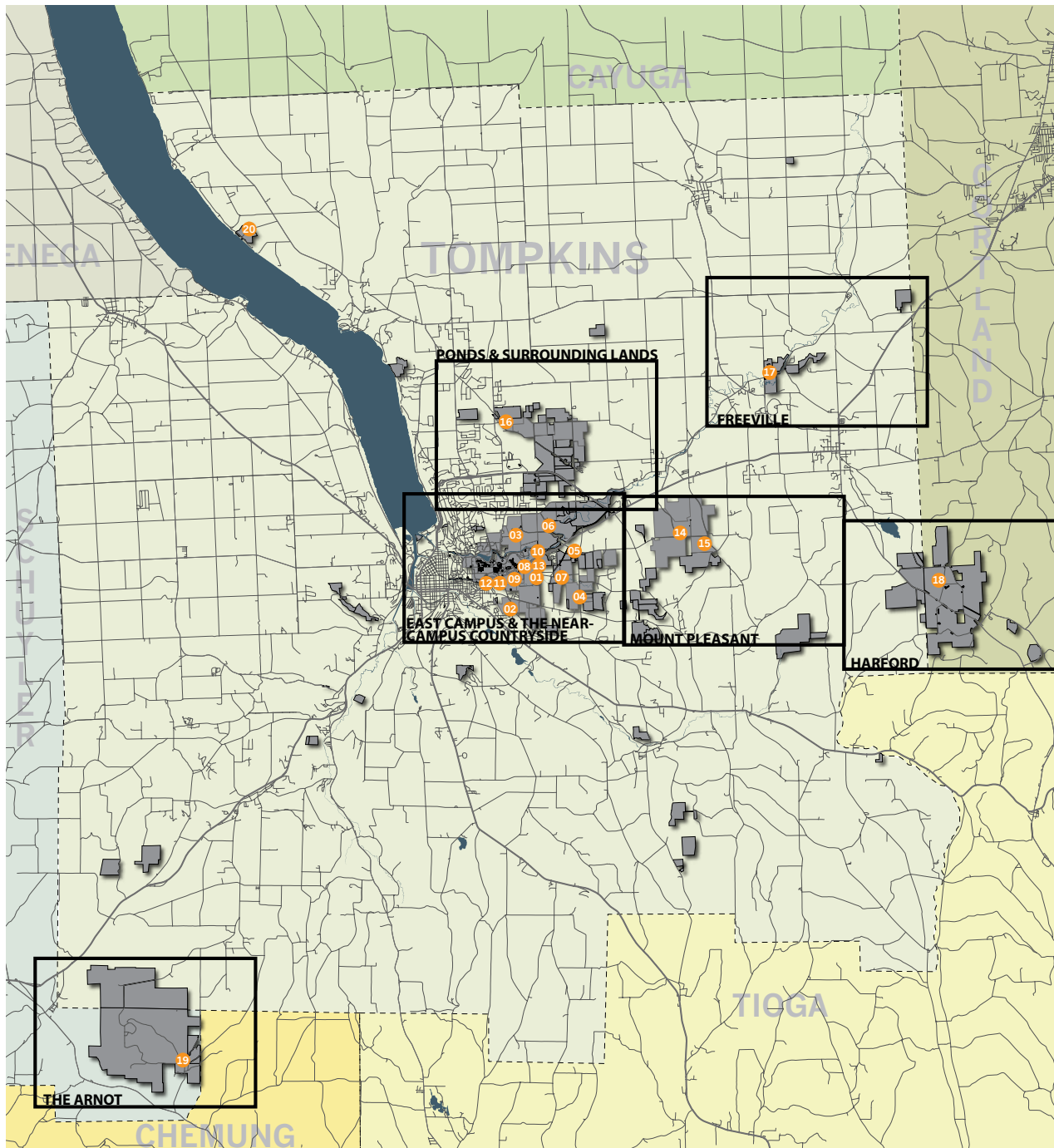
A more detailed analysis was that of individual farms, yards and research stations within the study areas. These contain most of the buildings and other facilities that often form the central activity area within each study area. The farms, yards and research stations are also shown on Figure 7.1. Some small and/or relatively inactive fields and facilities have not been captured in the study areas.

With the exception of the countryside uses close to the campus, significant change is not anticipated for most of the land-based facilities. However, the role and significance of many of the farms, yards and field stations to CALS and Cornell may change over time. Understanding and prioritizing this change provides a means for the College to make decisions related to investments in countryside facilities.

## Countryside Planning Objectives

The following planning objectives for countryside resources are embedded in the principles of the FMP and provide direction for the College in ongoing facility planning processes.

- Consolidate and centralize facilities and operations where possible and appropriate.
- Reduce duplication in facilities and support operations.
- Invest in facilities that support priority teaching, research and operational activities.
- Address facilities with a priority for investment or divestment.
- Prioritize energy efficiency and sustainable operations.



### Farms, Yards and Research Stations

- 01 game farm road complex
- 02 swine farm
- 03 bluegrass lane turf and landscape research center
- 04 turkey hill road
- 05 ellis farm complex
- 06 lydell and dyce labs
- 07 stevenson road
- 08 farm services shop complex
- 09 pomology complex
- 10 cornell plantations
- 11 resource ecology and management lab complex
- 12 east ithaca research farm
- 13 mcgowan farm
- 14 mount pleasant west
- 15 mount pleasant east
- 16 cornell ponds
- 17 freeville
- 18 harford teaching and research facilities
- 19 arnot forest facilities
- 20 ludlowville orchard

Figure 7.1: The six Tompkins County-based study areas with associated farms, yards and research stations. The NYSAES Geneva study area is not shown.

## 7.2 Tompkins County Countryside

### 7.2.1 East Campus & the Countryside Campus Precinct

East Campus and the Countryside Campus Precinct contain a diverse range of often interrelated uses. With development pressure on East Campus and expanded rural program requirements, the Countryside Campus Precinct offer a considerable opportunity for the reorganization of CALS' facilities and the incorporation new uses, such as greenhouses and animal-related teaching facilities. Minimizing conflicts and sharing land and resources will be important to the continued coordination of these many uses in what is a relatively small area.

The campus master plan provides direction for the long-term organization of facilities and activities in the Countryside Campus Precinct. The following broad objectives capture the high-level directions of the campus master plan, providing a level of certainty for planning CALS Countryside Campus Precinct resources.

- Protect existing research fields and the Orchards from encroaching activities and development.
- Direct teaching and research uses to the Orchards Zone south of Route 366/Dryden Rd.
- Consolidate and organize works yards within the existing Palm Road cluster.

- Locate new greenhouse uses southeast of the Guterman complex on the south side of Route 366/Dryden Road.
- Direct new animal facilities to the McGowan Zone near Game Farm Road.
- Enhance pedestrian connectivity between the campus and the countryside, and ensure effective vehicular circulation routes.

Some of the East Campus and Countryside Campus Precinct are home to other uses and users, including the Library Annex and Facilities Services' Palm Road Complex. New development should fit with existing uses, and some existing uses may need to be either reconfigured or potentially relocated. There are also a variety of field-based resources that will continue to be protected from encroaching activities. Uses to be protected and enhanced through the planning process include the Dilmun Hill Student Farm, the Orchards and the University's longest-standing research plots. As a general rule, existing research lands and natural areas will be protected from new uses and activities.

A number of significant initiatives and big moves are currently underway. These initiatives support ongoing efforts to consolidate and increase efficiencies in countryside facilities and activities.

- Planning for the Large Animal Teaching Center (LATC) is underway, including new road and site improvements. Uses in the existing Livestock Pavilion would be relocated to this general location.
- Among the locations likely to be used for such installations, the preferred location for a major CURBI bio-energy initiative has been identified immediately south of the LATC initiative.
- Farm Services activities and associated resources continue to be consolidated on Stevenson Road, including the relocation of Farm Services field uses east of East Hill Village.
- Redevelopment of the swine farm is planned in the Game Farm Road complex.

To support ongoing and new activities in this area, the College may consider acquisition of adjacent fields and facilities. For example, long-term acquisition of the Game Farm site would allow further consolidation and centralization of countryside resources.

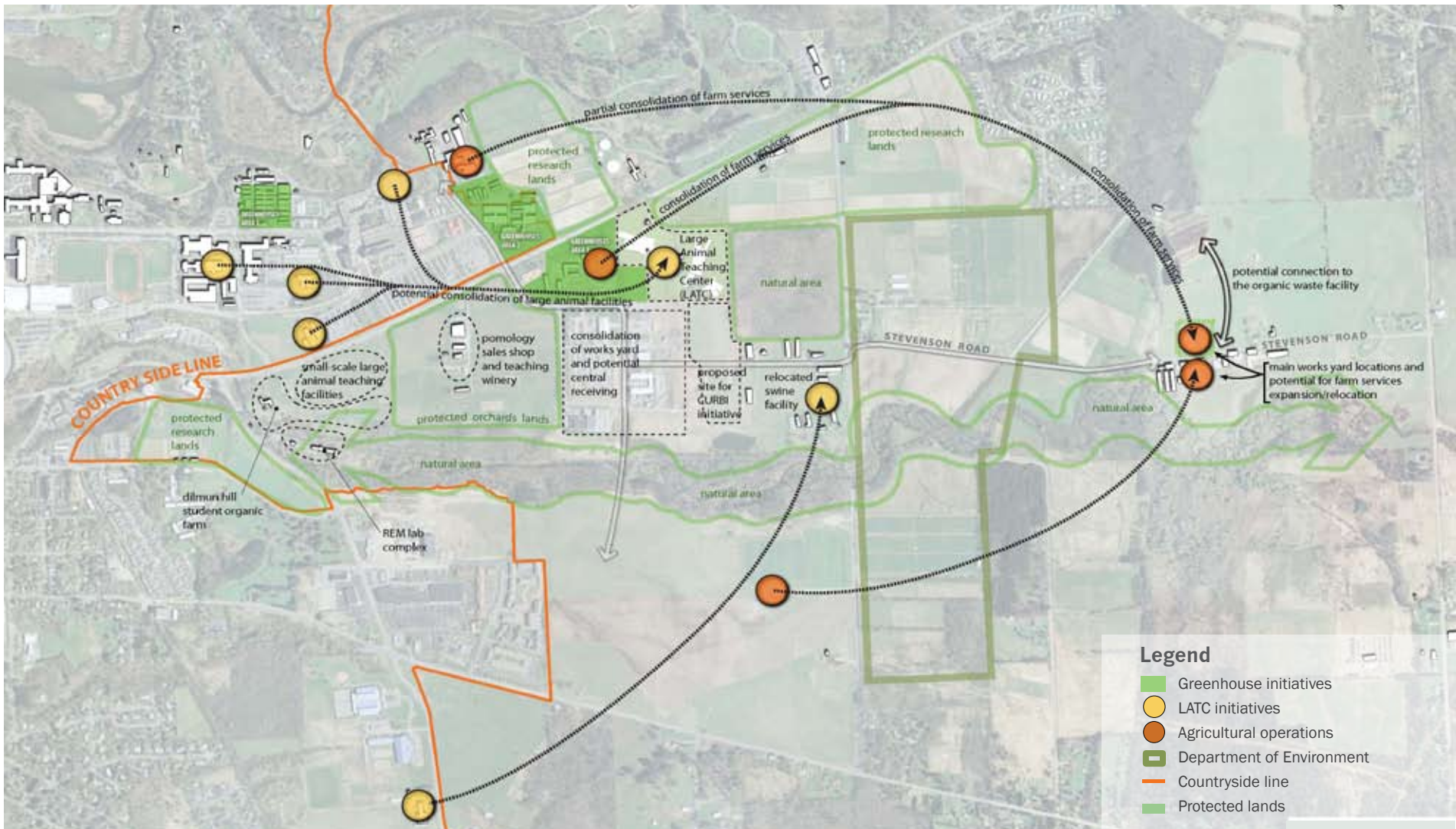


Figure 7.2: Planning directions for East Campus and the Countryside Campus Precinct



- 01 game farm road complex
- 02 swine farm
- 03 bluegrass lane turf and landscape research center
- 04 turkey hill road
- 05 ellis farm complex
- 06 lydell and dyce labs
- 07 stevenson road
- 08 farm services shop complex
- 09 pomology complex
- 10 cornell plantations
- 11 resource ecology and management lab complex
- 12 east ithaca research farm
- 13 mcgowan farm

**Figure 7.3: The East Campus and near-campus farms, yards and research stations**

### 01 Game Farm Road Complex

This building cluster supports a wide range of uses: poultry research, the Cornell Raptor program, and arthropod research in the Sarkaria Arthropod Research Lab. This site offers opportunities for new development given its proximity to Core Campus, its secluded setting and its connectivity to the Stevenson Road complex. The planned development of LATC and CURBI facilities on the western edge of this area reinforce its potential for more intensive use over the long-term for a range of research and production activities related to animal science and renewable bio-energy.

### 02 Swine Farm

This facility is undersized for its current use and has significant building condition issues. If a swine farm facility is expected to be a long-term College priority, options other than reinvestment in the existing facilities need to be considered. Given its current location near residential areas and athletic facilities and the potential of this site for development for other uses, relocation of the swine farm operation to a location contiguous with other large animal holding and research facilities should be considered. The Game Farm Road area is the recommended home for such a facility.



Bluegrass Lane Research Facility

### 03 Bluegrass Lane Research Facility

This relatively small complex has an important adjacency to the golf courses. Significant new development in this area is not recommended.

### 04 Turkey Hill Road

This cluster of buildings is relatively distant from many of the Countryside Campus Precinct activities and the buildings are in poor condition. Expansion of current uses is not expected. Decommissioning of buildings should be considered.

Turkey Hill Buildings Decommissioning List		
Bldg #	Building Name	Area (NASF)
1112	PP/Ecology Systems Field Building	5,215
1114A	Schwardt Lab	7,461
2730B	Turkey Pole Barn	3,560
2730C	Turkey Processing Building	506
2730E	Turkey Complex Garage	1,172
2730G	Storage Shed 1	135
2730J	Storage Shed 2	135
2730K	Storage Shed 3	135
<b>Total Area (NASF)</b>		<b>18,319</b>

Table 7.1: Turkey Hill Buildings Decommissioning List

### 05 Ellis Farm Complex

The current uses of this small building cluster do not have a direct relationship with the surrounding lands. Some research project work is housed here as well as miscellaneous storage for department equipment that is not currently used. A consolidated and centrally managed CALS storage facility is proposed for the Ithaca Campus which could house these types of materials. Project work space in field support buildings closer to the main campus should be sought for the current project uses located here. This would allow these facilities to be decommissioned. In the short-term, storage for farm services equipment would be a suitable use.

Ellis Farm Buildings Decommissioning List		
Bldg #	Building Name	Area (NASF)
2813A	ELLIS FARM BARN	2,136
2813C	ELLIS FARM SHED	280
2813F	ELLIS FARM TRAILER	829
<b>Total Area (NASF)</b>		<b>3,245</b>

Table 7.2 - Ellis Farm Buildings Decommissioning List

### 06 Lidell and Dyce Labs

These modest buildings are in fair condition and accommodate bee keeping and other uses. Relatively close to Core Campus, they can be accessed from the north and through the Bluegrass complex, avoiding vehicular traffic on Dryden Road/Route 366. No expansion or change in use is expected.

### 07 Stevenson Road/Reed Farm Complex

While some older structures are in poor repair, a number of new silos/grain bins have recently been constructed here and additional development is anticipated. With good access to Core Campus and the Mount Pleasant Road fields and service buildings, this area can become the focus for services provided by the Cornell University Agricultural Experiment Station (CUAES) including the Farm Services Unit.

Activities and uses to be housed in existing and/or new space include:

- Implement repair shop, parts and equipment storage space
- Office space for unit staff



Orchards

- Covered vehicle storage
- Storage of animal feed and fodder
- General College equipment and supplies including surplus furniture

Relocation of the Farm Services unit to this area will need to precede development of the Palm Road site for College greenhouses.

### 08 Farm Services Shop Complex

This small cluster of buildings is surrounded by other uses and is in very poor condition. Consolidation with other Farm Services facilities along Stevenson Road should be considered. The buildings should be demolished and the site reserved for the development of Greenhouse Area 3. Some uses in this area may be relocated to the Palm Road service complex, where appropriate.

Farm Services Shop Decommissioning List		
Bldg #	Building Name	Area (NASF)
1085A	Shop	12,092
1085B	Open Shed B	3,140
1085C	Open Shed C	6,280
1085D	Pole Barn	2,465
1085E	Pesticide Storage	177
<b>Total Area (NASF)</b>		<b>24,154</b>

Table 7.3: Farm Services Shop Decommissioning List

### 09 Pomology Complex

This facility is located in the heart of the Orchards, constraining significant expansion of facilities. The sales shop and teaching winery play a public outreach role and are appropriate uses for this location. Of the service and support structures, a number of structures listed below are rated poor quality and should be demolished.

Promology Complex Decommissioning List		
Bldg #	Building Name	Area (NASF)
1101C	QUONSET	3,576
2811E	POMOLOGY TRAILER	615
<b>Total Area (NASF)</b>		<b>4,191</b>

Table 7.4: Pomology Complex Buildings Decommissioning List

### 10 Cornell Plantations

This building cluster provides support facilities for Cornell Plantations operations. Expansion of uses is constrained by the adjacent university fleet facilities and Fall Creek natural areas. This location has been identified as a gateway to the campus and there is potential to improve the quality of the setting, the profile of the existing and/or new uses, and access to the Arboretum. Renewal of the area along these lines will require coordination with and potential relocation of the fleet facilities.

Generally, Cornell Plantations manages a large inventory of natural areas, the 150-acre arboretum and a botanical gardens. The recent construction of the Nevin Welcome Center augments its existing inventory of visitor and educational facilities, offices and utility facilities, and plant production space. Cornell Plantations space, lands and support facilities will be managed according to space management guidelines, this FMP and the campus master plan.



### 11 Resource Ecology and Management Lab

This collection of buildings is rated fair to poor in the building condition assessment. From a functional perspective, they provide very poor quality space for the activities they accommodate, resulting in poor utilization of the floor area provided. Investment in upgrading these buildings is not recommended.

However, the site provides an opportunity to develop a near-campus central field research support complex that would house field sample processing and storage facilities. It would provide a convenient staging point for field work for both undergraduate and research programs.

REM Lab Complex Decommissioning List		
Bldg #	Building Name	Area (NASF)
1013B	Resource Ecology & Mgt. Lab	7,821
1013C	Fish Hatchery: Eco-toxicology	1,746
1013D	Aquaculture Building	1,755
1013F	Resource Ecology & Mgt. Lab	227
<b>Total Area (NASF)</b>		<b>11,549</b>

Table 7.5: REM Lab Complex Decommissioning List

### 12 East Ithaca Research Farm

Located just south of the Core Campus, the East Ithaca Farm accommodates the Department of Horticulture’s hoophouse and cut-flower research. The support structures were constructed to serve a larger farm area using the methods of a previous age.

Uses include project preparation, plant material processing, staff work areas and storage. The buildings are rated fair to poor. Investment in the largest of the buildings could provide good quality space to house farm activities. The smallest of the three buildings can be considered for decommissioning.

East Ithaca Research Farm Decommissioning List		
Bldg #	Building Name	Area (NASF)
1087B	Vegetable Crop Building B	1,200
<b>Total area (NASF)</b>		<b>1,200</b>

Table 7.6: East Ithaca Research Farm Decommissioning List

### 13 McGowan Farm

Utility structures house the NYS Seed Improvement Program which operates within the Department of Plant Breeding’s extension program. The buildings are rated poor in the building condition assessment process. Continued investment in these buildings depends on the College’s long-term plans for housing NYSIP activities.



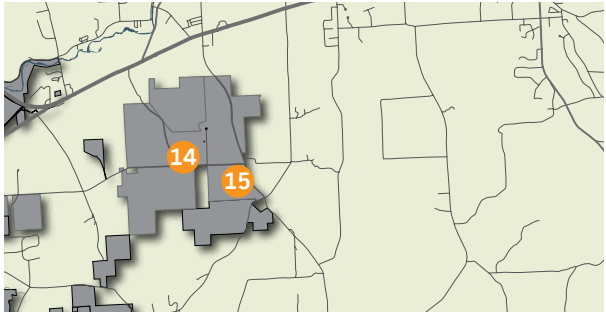
### 7.2.2 Mount Pleasant

Currently managed by a number of CALS and other users, the Mount Pleasant lands provide a variety of resources. Located near the eastern terminus of Mount Pleasant Road, this area contains two farm yards (Mount Pleasant East and Mount Pleasant West) and associated agricultural fields. The Mount Pleasant lands also feature a variety of unique natural areas. While much of the land consists of fields and thickets, Pine Woods is one of Cornell’s few remaining stands of old growth forest, and Frost Ravine is home to a unique upland riparian ecosystem. This habitat diversity contributes to the high level of value placed on the Mount Pleasant lands.

A key feature of any change in this area will be the retention and protection of existing natural features and functions. For proposed new development, such as the 2004 study investigating the potential for wind turbines on this site, a comprehensive analysis must be performed to understand potential impacts. Subject to further study, this site may be a potential location for an organic or biofuels farm.

Both Mount Pleasant East and West are active farms with potential for future expansion, if required. Existing facilities should see investment, where appropriate, to maintain operating efficiency.

The East Farm structures provide substantial storage capacity for the College including equipment and materials required by the Farm Services unit. The original farmhouse should be considered for refurbishment or demolition, and related structures rated as poor in quality should be decommissioned and demolished. Existing facilities at the West Farm are suitable for storage functions and project equipment that requires shelter or is only needed for seasonal use.



- 14 mount pleasant west
- 15 mount pleasant east

Mount Pleasant Farms Decommissioning List		
Bldg #	Building Name	Area (NASF)
2515B	MT P WEST SMALL BARN B	1,265
2515C	MT P WEST SMALL BARN C	572
2515D	MT P WEST HOUSE 608 MT P ROAD	2,778
2515E	MT P WEST HOUSE GARAGE	275
2550B	MT P EAST STORAGE 2	3,597
2550D	MT P EAST STORAGE 1	4,656
2550F	MT P EAST HOUSE 353 MINEAH RD	2,735
2550G	MT P EAST FARM OFFICE	554
<b>Total Area (NASF)</b>		<b>16,432</b>

Table 7.7 – Mount Pleasant Farms Decommissioning List



Experimental Ponds

### 7.2.3 Experimental Ponds and Surrounding Lands

The Cornell Experimental Ponds and surrounding natural areas provide a unique setting for both basic and applied research, as well as teaching in classes such as limnology, agronomy, and field ecology. The experimental ponds station is comprised of two main sites each consisting of a series of constructed ponds. There are 41 ponds on the Warren Road site immediately north of the large College of Veterinary Medicine Equine building cluster.

Another 50 ponds are situated further east on the Neimi Site, along Hanshaw Road. In addition to research, this study area plays an important ecological role, with a significant natural landscape that serves, among other things, as a major bird habitat.

Research uses will continue to play a role in this area. The property also complements the Sapsucker Woods Sanctuary of the Laboratory of Ornithology as it serves as a habitat for a variety of bird species. Existing facilities should see investment, where appropriate, to maintain operating efficiency and support existing activities.

#### Lab of Ornithology

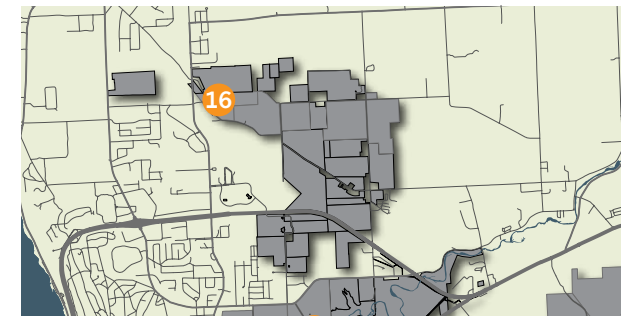
Operating as non-academic unit but with cross-appointed faculty and graduate students, the Lab of Ornithology is engaged in a variety of ornithology and biodiversity research activities and plays a major role in extension, serving as one of the largest and best regarded ornithological research stations in the world. Funding for the Lab’s programming, capital investment and maintenance is primarily from grants, donations and revenue for services.

South of the Experimental Ponds and Route 13, the Lab operates at the 230-acre Sapsucker Woods sanctuary in several academic and utility buildings. The recently constructed Johnson Centre for Birds and Biodiversity houses most research and extension activities and serves as a visitor center. It is supported by the Ornithology Barn and Maintenance Building. The Langmuir Lab is a leased space for equipment production, located in the nearby Cornell Business and Technology Park.

Through site planning and programmatic studies, the Lab has identified and protected for the long-term expansion of the Johnson Centre. Facilities will continue to be maintained and expanded to meet

the Lab’s needs, including expansion or acquisition of adequate production facilities.

In addition to the large natural areas of the Experimental Ponds, the Sapsucker Woods features a large wetland and forested area that serves as a sanctuary for birds and other wildlife. This area and surrounding Cornell lands should continue to be protected for such purposes. Through negotiations and partnerships with surrounding landowners and local governments, CALS and Cornell should ensure that nearby development activities do not adversely impact these lands and their function. The Lab jointly manages the Durland Bird Preserve in Ellis Hollow with Plantations, which will continue to be reserved for natural and educational functions.



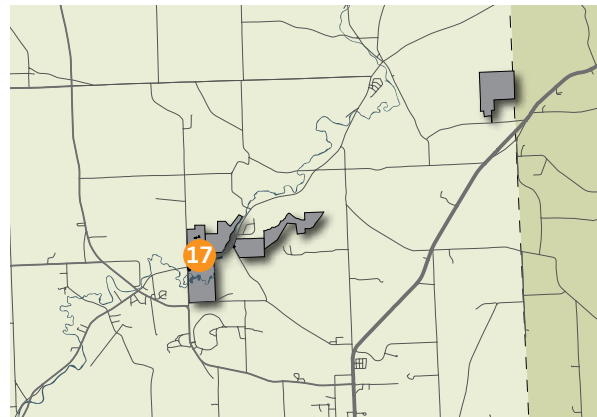
16 cornell ponds



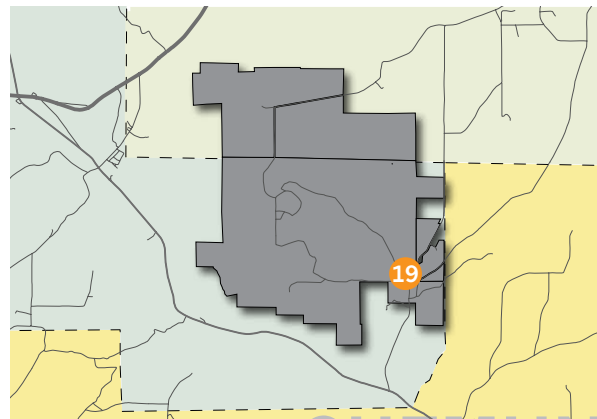
### 7.2.4 Freeville

The Freeville Research Farm consists of the Homer C. Thompson Vegetable Research Farm and the Freeville Organic Farm. The farm is a valuable area for research given its unique soil composition and the fact that 30 acres of fields have received organic certification. Managed by CUAES, these research lands primarily host graduate student and faculty research.

Given its size, its specialized facilities and relatively close proximity to campus, Freeville will continue to be an important resource. The area could accommodate additional facilities should they be required to support agricultural research and operations. Given the adequate state of most existing facilities, significant facility investment is not required.



17 freeville



19 arnot forest facilities

### 7.2.5 Arnot Forest

Comprised of over 4,000 acres of forested lands, the Arnot Forest is a unique resource for CALS and surrounding residents. The Arnot Forest provides lands and facilities for forestry and wildlife research and teaching as well as for recreation, fulfilling all three components of the College's academic mission of research, teaching and extension. The Forest also includes the field campus, with a series of overnight cabins built around a main lodge, among other research-related facilities. The Forest is mainly used by the Department of Natural Resources, serving as a field station for best forest management practices, wildlife management, timber resource management and maple syrup production.

Current uses and initiatives should be maintained, and low-impact expansion of facilities may be considered, where necessary and appropriate. Acquisition of adjacent lands, particularly to the east of the Arnot, may be considered to expand the total area of protected forest. Existing facilities should see investment, where appropriate, to maintain operating efficiency and support existing activities.



## 7.2.6 Teaching and Research Center Harford

The Teaching and Research Center Harford, located 15 miles east of the Main Campus on Route 38, plays an integral role for research and teaching in animal science, dairy science and farm management. Facilities here include a wide range of dairy and large animal facilities, and serve as the current home for the CALS dairy facility. The landscape character of this area is mostly pasture and crop lands, bisected by riparian woodland buffers and other edge forest conditions. These edge forests play an important role in the ecology of these lands, providing valuable wildlife habitat, mitigating storm water runoff and controlling both wind and water erosion.

The facilities comprise the following components:

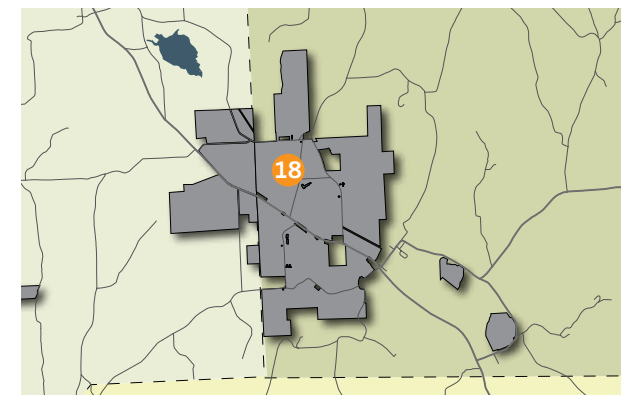
- A Dairy Unit, with up to 1,000 head of Holsteins, is used in teaching, research and extension programs in dairy cattle management, nutrition and reproductive physiology.
- A Beef Unit with a total capacity of more than 500 cattle which can accommodate research on all phases of beef production.

- A Sheep Unit provides facilities for some 500 ewes and has accommodated research programs that address lamb production and the development of nutritional schemes.

The existing dairy facilities at the Teaching and Research Center Harford are in critical need of renewal. The building condition assessment indicates that of the 260,000 net square feet, 49% is rated “poor” and 50% rated “fair”.

A comprehensive feasibility study for the operation concluded that using the existing site and expanding to the location across Cornell Lane is the most affordable, least disruptive and best approach to modernizing this operation. The existing buildings will be replaced, as they cannot be modernized to meet current industry standards and animal research requirements. In addition to new facilities, new driveways, roadways, and parking areas will be required, as well as utility upgrades for water, stormwater, sanitary sewer, electrical, telecommunications and perimeter security. Phase 1 of this renewal will include construction of a new freestall barn, which should be completed by 2012.

Given the various natural heritage functions, appropriate management of edge forests and other natural features will contribute to the quality of the land and farm resources.



18 harford teaching and research facilities

## 7.3 NYSAES Geneva Countryside

The close relationship between the NYSAES Geneva campus and the countryside research fields is a great asset. This condition contributes directly to the success of research and extension activities, as access to and within the land-base is convenient for both researchers and field staff. There are three ways in which this relationship between the Experiment's campus and countryside may be protected and enhanced.

### 1. Consolidate Operations

With a relatively consolidated land base around a centralized farm-yard, the Geneva countryside resources ensure efficiency in research activities and operations. Further consolidation through divestment and acquisition may occur as NYSAES Geneva refines its land base to match research needs. Where possible, internal field circulation networks should be maintained in good working condition to minimize use of public streets by farm vehicles. Special consideration may be given to organic agriculture activities, which may require isolation and cannot be included in regular crop rotation.

The Research Farm North at the heart of the NYSAES Geneva field resources is the logical location for concentrating field support buildings. Investment in field support structures can be concentrated on the Research Farm North building complex where the buildings are generally rated as "fair" to "good".

Candidates for decommissioning include the original barn structures that are generally rated as "poor" in the building condition assessments and the outlying farms including Crittenden, Darrow, Loomis and Robbins Farms as shown on Figure 7.4 and listed in Table 7.8.

### 2. Maintain and acquire the best land to support the Station's activities

Throughout its history, the primary focus of NYSAES Geneva has been fruit and vegetable research. The surrounding soils and land conditions are especially suited to this type of agriculture. However, as the research interests of NYSAES Geneva evolve and expand, acquisition of new field resources may be required. Soil type and quality should continue to meet NYSAES Geneva's long-term research needs.

Generally, all fields should remain within a three to five mile radius of campus for ease of access and to ensure efficient operations and maintenance. Where there are unique soil needs, such as conditions required for growing grapes, special consideration may be made. In these cases, opportunities to partner with existing CALS remote research fields and facilities should be considered.

### 3. Protect agricultural lands from urban encroachment

Located just outside of the City of Geneva's urban area, the research fields play a secondary role in protecting the surrounding countryside from development. Faculty and staff have also been effective in their support for countryside and agricultural protection. Continued support for agricultural land protection will protect NYSAES Geneva's research activities and strategic location.

There are a number of places near or adjacent to NYSAES Geneva and the countryside research fields that have seen urban development or have the potential for future development. This is largely due to the proximity of this area to the City of

- NYSAES Geneva ①
- Denton Farm/ Ag Tech Park ②
- Research Farm North ③
- Research Farm South ④
- Darrow Farm ⑤
- Robbins Farm ⑥
- Lucey Farm ⑦
- McCarthy Farm ⑧
- Wellington Farm ⑨
- Loomis Farm ⑩
- Crittenden Farm ⑪
- urban expansion/potential conflict areas [diagonal hatching]
- City of Geneva [purple shading]
- on-street farm access routes [dashed line]

Geneva and the reduced property tax requirements for development in the Town of Geneva. This can lead to urban/rural conflicts around issues such as spray-drift, noise, manure application, muddy roads and other concerns. This may also have the effect of creating a boundary between the urban NYSAES Geneva campus and its rural countryside lands.

In terms of potential issue areas, the rural portions of North Street and Preemption Road are fronted with residential lots, with remnant agriculture uses behind the residences. The same pattern occurs on Routes 5 and 20, where commercial development stands between the road and the fields. Other agricultural areas have been considered for conversion to residential uses. Potential sale or development of these lands should be closely monitored to ensure that future uses do not negatively impact NYSAES Geneva’s activities.

In some cases, residential and other non-agricultural land uses exist in close proximity or adjacent to research lands. Research and farming activities in these areas should be sensitive to these land uses by ensuring that potential adverse impacts

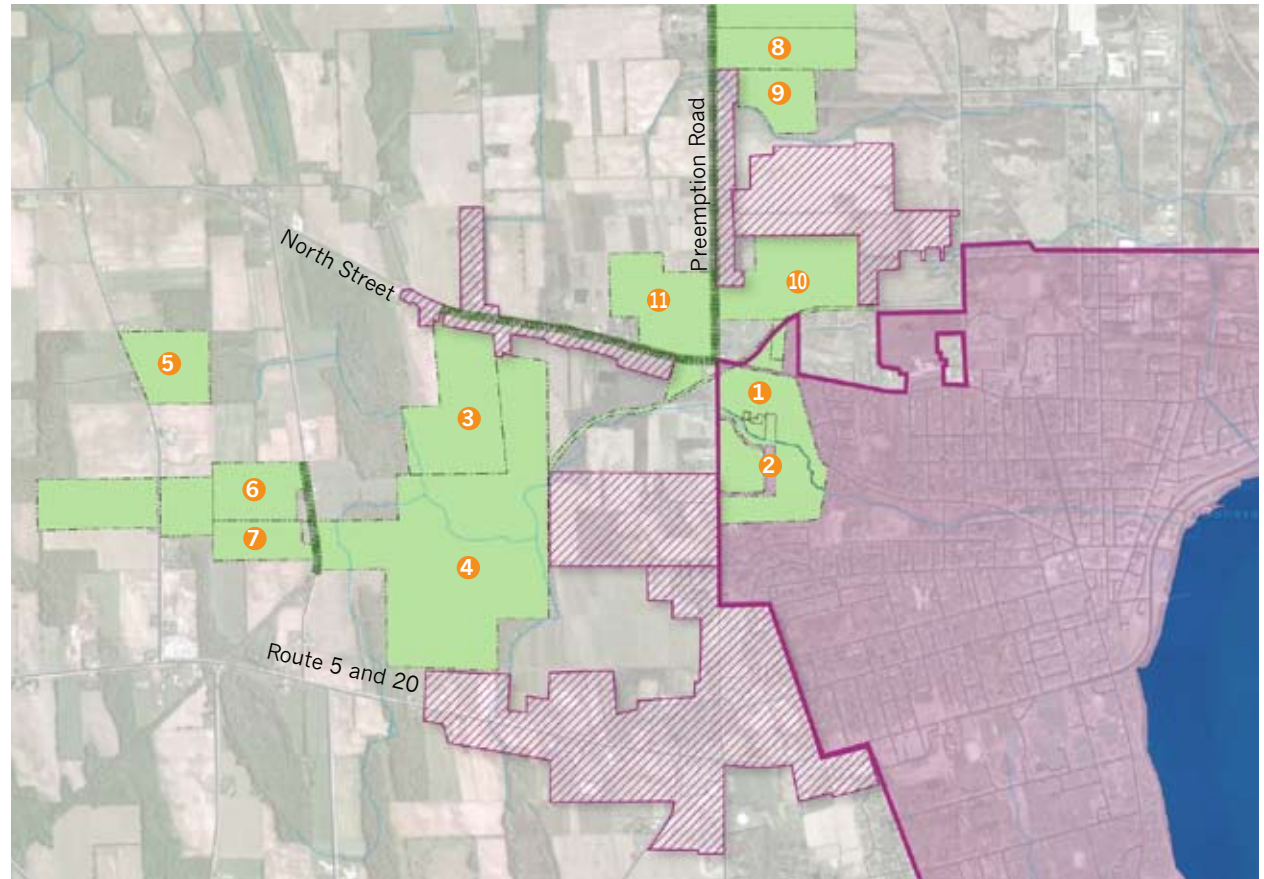


Figure 7.4: NYSAES Geneva countryside farms, yards and research stations

are minimized (e.g. spray-drift, noise, manure application, muddy roads, etc.). Further, the nature of field-based research activities and operations can be communicated to the surrounding community to minimize concerns and support cooperation.

Geneva Countryside Decommissioning List		
Bldg #	Building Name	Area (NASF)
4931A	Crittenden Farm Annex	1,202
4931B	Crittenden Farm Barn	6,615
4931C	Crittenden North Barn 1	1,725
4932	Darrow Farm Barn	2,912
4933	Loomis Farm Barn	4,792
4945	Robbins Farm Pole Barn	2,339
4989	Gates Farm Barn	5,291
4989A	Gates Farm Shed	130
<b>Total Area (NASF)</b>		<b>25,006</b>

Table 7.8: Geneva Countryside Decommissioning List





# 8 Implementation

This chapter provides a road map for the renewal of CALS' facilities, including an implementation strategy, timeline, and further detail around capital investment and divestment.

- 
- 8.1 Ithaca Major Capital Project Development
  - 8.2 NYSAES Geneva Major Capital Project Development
  - 8.3 Capital Investment and Strategic Divestment

Through the implementation of the FMP, including decision-making processes regarding major capital investment, deferred maintenance, divestment of facilities, campus-building and landscape initiatives, and coordination with other initiatives, CALS must continue to be guided by the planning principles that informed the development of the FMP. These principles include:

1. Achieve quality, equity and adequacy of facilities
2. Prioritize sustainability
3. Use resources efficiently
4. Manage the countryside as defined by the Cornell campus master plan
5. Integrate with the campus master plan and university goals
6. Strengthen facility planning and space management practices
7. Reinforce CALS' presence and home on the Ithaca Campus

This chapter aims to address the following three goals of the FMP, as outlined in Chapter 1:

- Establish the relative priority of CALS' various facility needs;
- Match the priority facilities needs to funding opportunities and mechanisms; and
- Identify the ongoing costs to repair and maintain the existing physical inventory.

It provides a road map for the renewal of CALS' facilities, including an overview of all major capital projects and detailed implementation tools to address capital investment and divestment.

Significant investment in facilities will be required to address CALS' pressing building and space issues. With a 20-year planning horizon, implementation of the FMP will require extensive coordination, planning and prioritizing. Significant investment will also be required from the state, the university and other sources to ensure that the College's facilities match its world-class reputation and fully support the academic mission of teaching, research and extension.

The baseline data and assumptions upon which this plan is based reflect a certain period in time. It is impossible to accurately predict all future academic priorities and trends nor is it possible to understand future economic conditions. Given this uncertainty, capital planning decision-making processes should continue to revisit the inputs to this plan, including building condition, space utilization, growth assumptions and other relevant factors that may have an impact on space need. Doing this will ensure the plan remains relevant for the College and continues to accurately provide direction for the renewal and growth of CALS' facilities.

## | 8.1 Ithaca Major Capital Project Development

This section provides further detail to support the implementation of the major capital projects and related campus enhancement initiatives on the Ithaca campus.

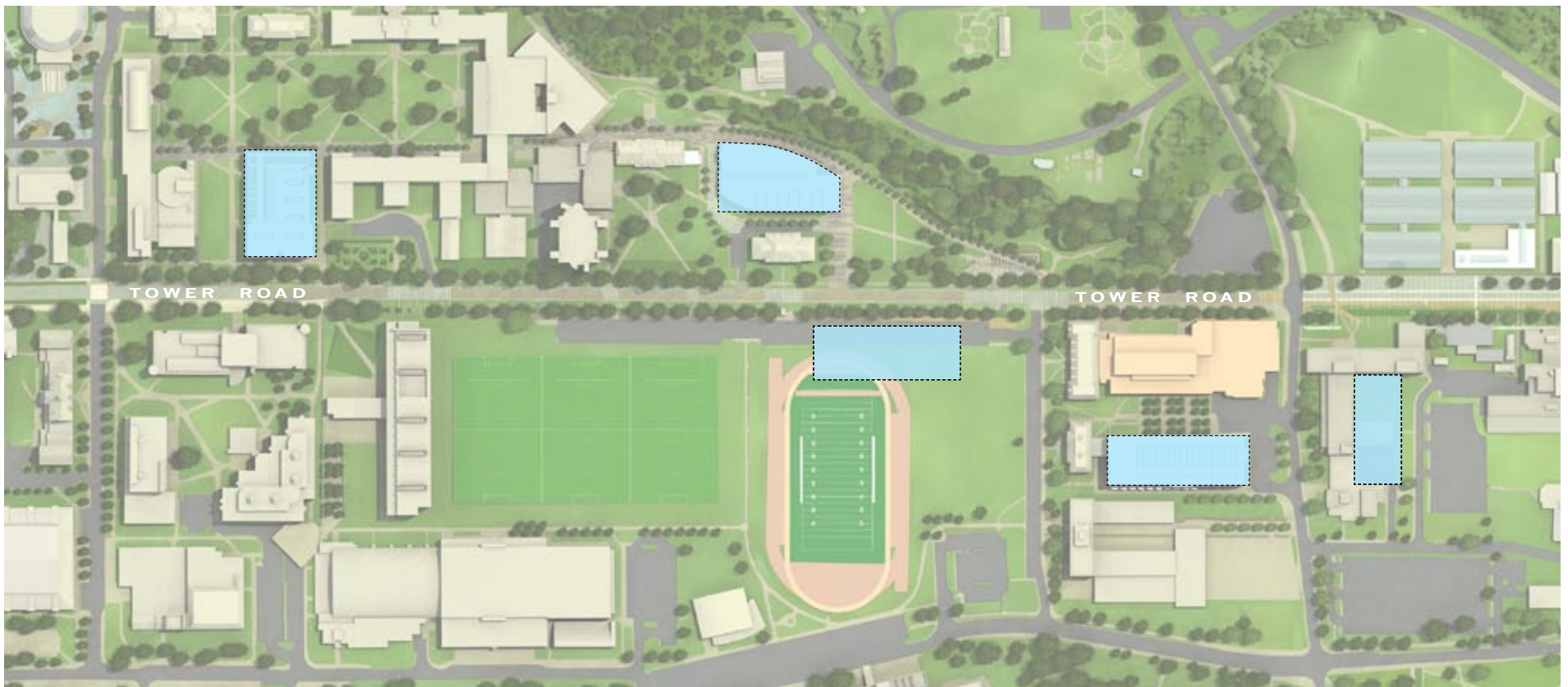

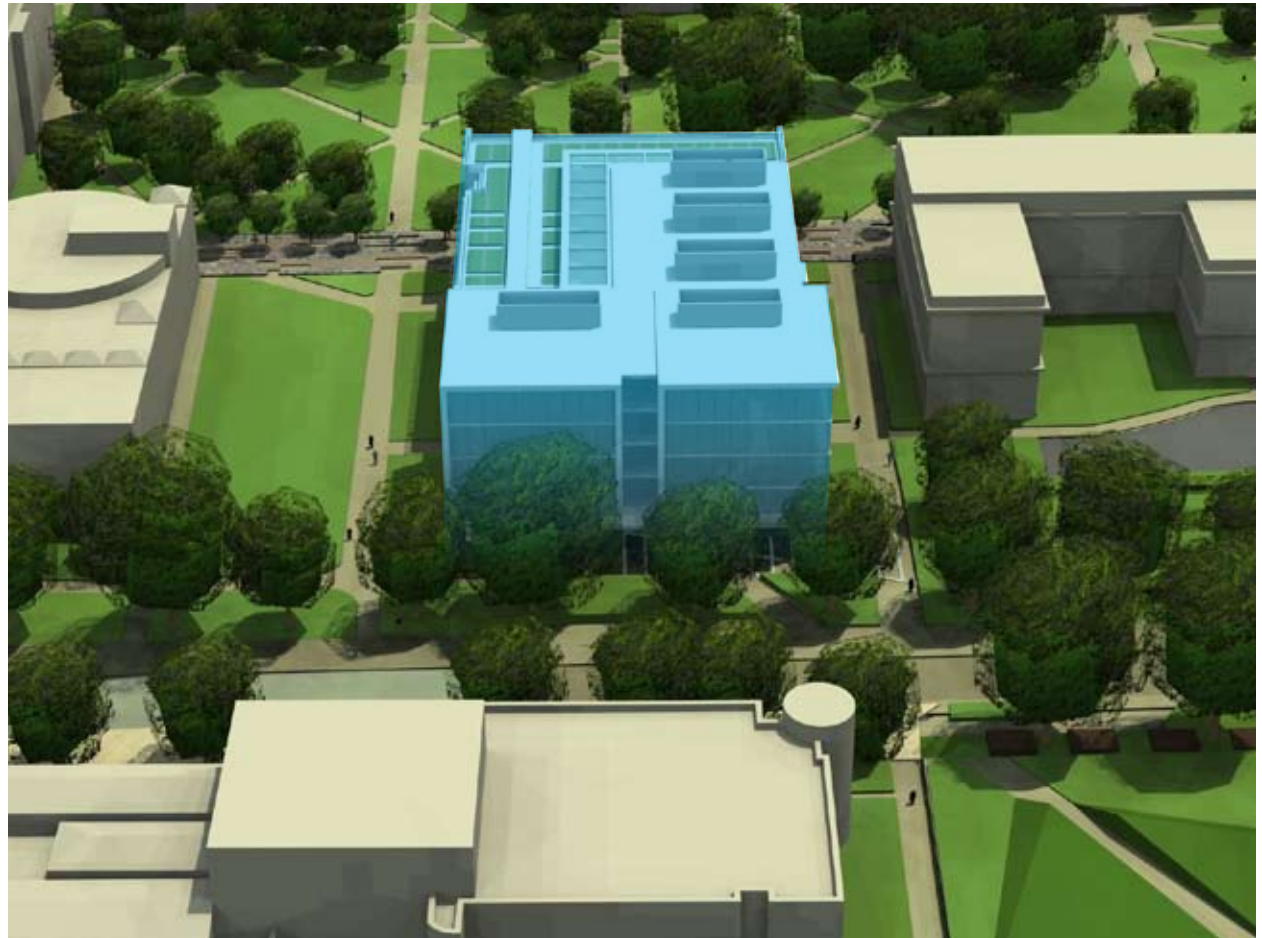
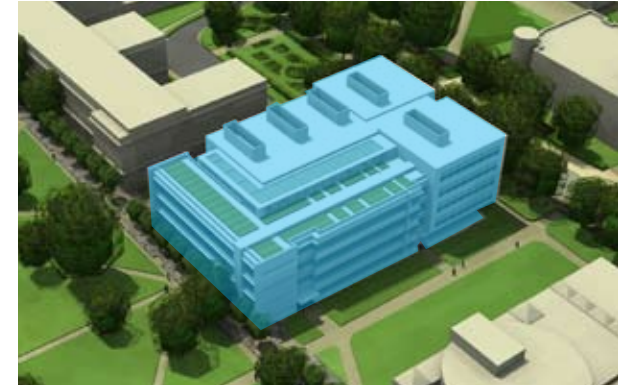
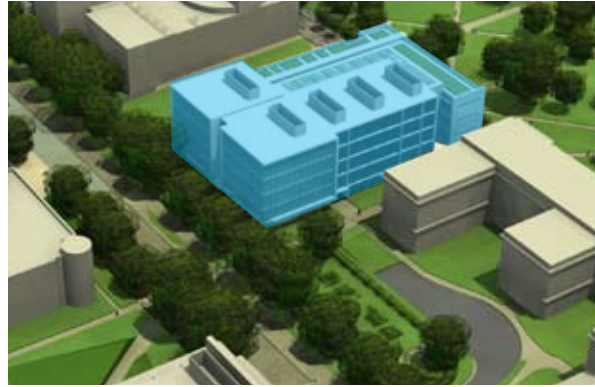


Figure 8.1: Potential major capital project development sites (Ithaca Campus) 

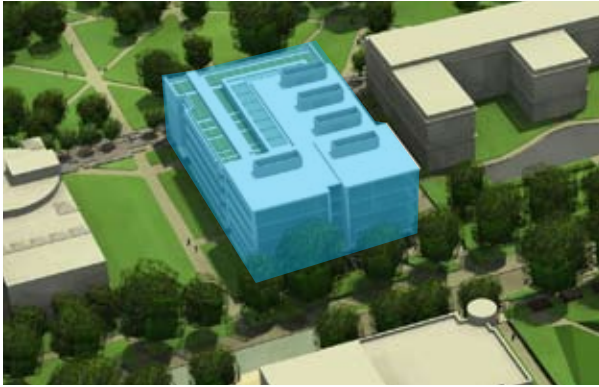
### 8.1.1 Integrative and Translational Sciences Teaching and Research Facility

The scope of the Project includes a new multi-storey laboratory structure and a sub-grade teaching and research service facility integrated with a renovated and restored Plant Science Building. The 5-storey laboratory structure, with an approximate net area of 130,800 nasf (209,300 gsf), will accommodate serviced laboratories for teaching and research (see Table 8.1). The sub-grade teaching and research service facility will provide space for common laboratory support functions.

This facility can integrate the new laboratory block with the adjacent Plant Science Building and connect to the existing service tunnel that runs to Weill Hall. The facility will house Life Sciences-related teaching and research that depend on access to core facilities in Weill Hall and that take advantage of synergies to be found through interdisciplinary work. A fully renovated Plant Science Building will accommodate classroom, office space and other “dry uses” not requiring extensive building services.



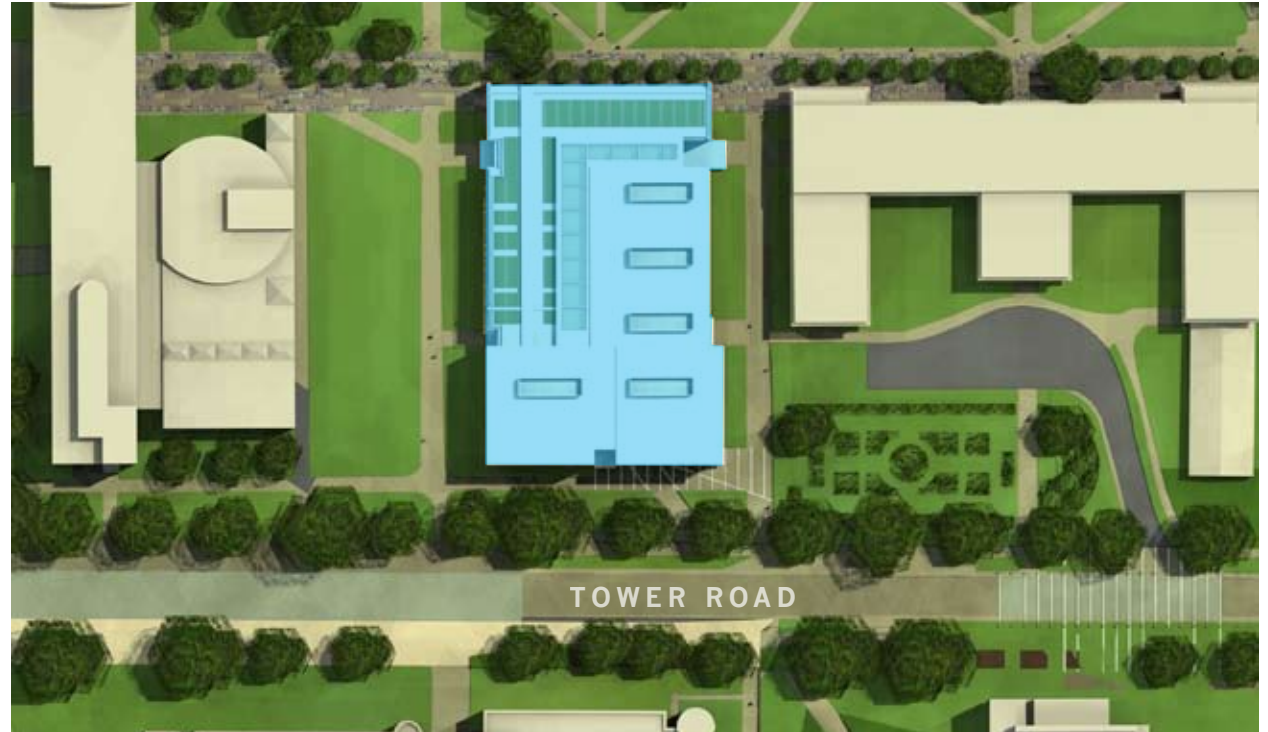
The Translational Sciences Research Facility will fill in the Ag Quad's “gap-tooth” site



The new laboratory structure on five above-grade levels will be sited to preserve views from Tower Road to the Ag Quad. Elevated glazed passageways may link the new building to the Plant Science Building above grade, in addition to the basement level connection.

A challenge for this site is to achieve programmatic requirements while maintaining appropriate building massing, including appropriate height and setbacks. At the site planning stage, direction should be taken from the campus master plan to ensure effective integration into the campus built environment while achieving programmatic needs for the site.

The new facility is necessary to accommodate uses displaced by the renewal of the Plant Science Building. Given the high priority need to address facility conditions in the Plant Science Building and the high degree of space need in the Life Sciences Discipline Area, the integrative and translational sciences research facility is CALS' highest priority for major capital development.



**Figure 8.2: Integrative and Translational Sciences Teaching and Research Facility site**

Bldg Level	New Building 6C (GSF)	New Building 6C (NASF)	Plant Science Building (NASF)	Plant Science & New Building 6C (NASF)
B	49,300	30,800	-	30,800
G	32,000	20,000	16,982	36,982
1	32,000	20,000	18,788	38,788
2	32,000	20,000	17,972	37,972
3	32,000	20,000	18,788	38,788
4	32,000	20,000	10,205	30,205
<b>Totals</b>	<b>209,300</b>	<b>130,800</b>	<b>82,735</b>	<b>213,535</b>

**Table 8.1: Integrative and Translational Sciences Teaching and Research Facility and Plant Science Building assignable and gross floor areas**

### 8.1.2 Environmental Sciences Teaching and Research Facility

This scope of this project includes the development of a stand-alone Environmental Science laboratory facility in two optional locations. With an approximate net area of 89,200 nasf (142,800 gsf), the project will accommodate serviced laboratories for teaching and research (see table 8.2).

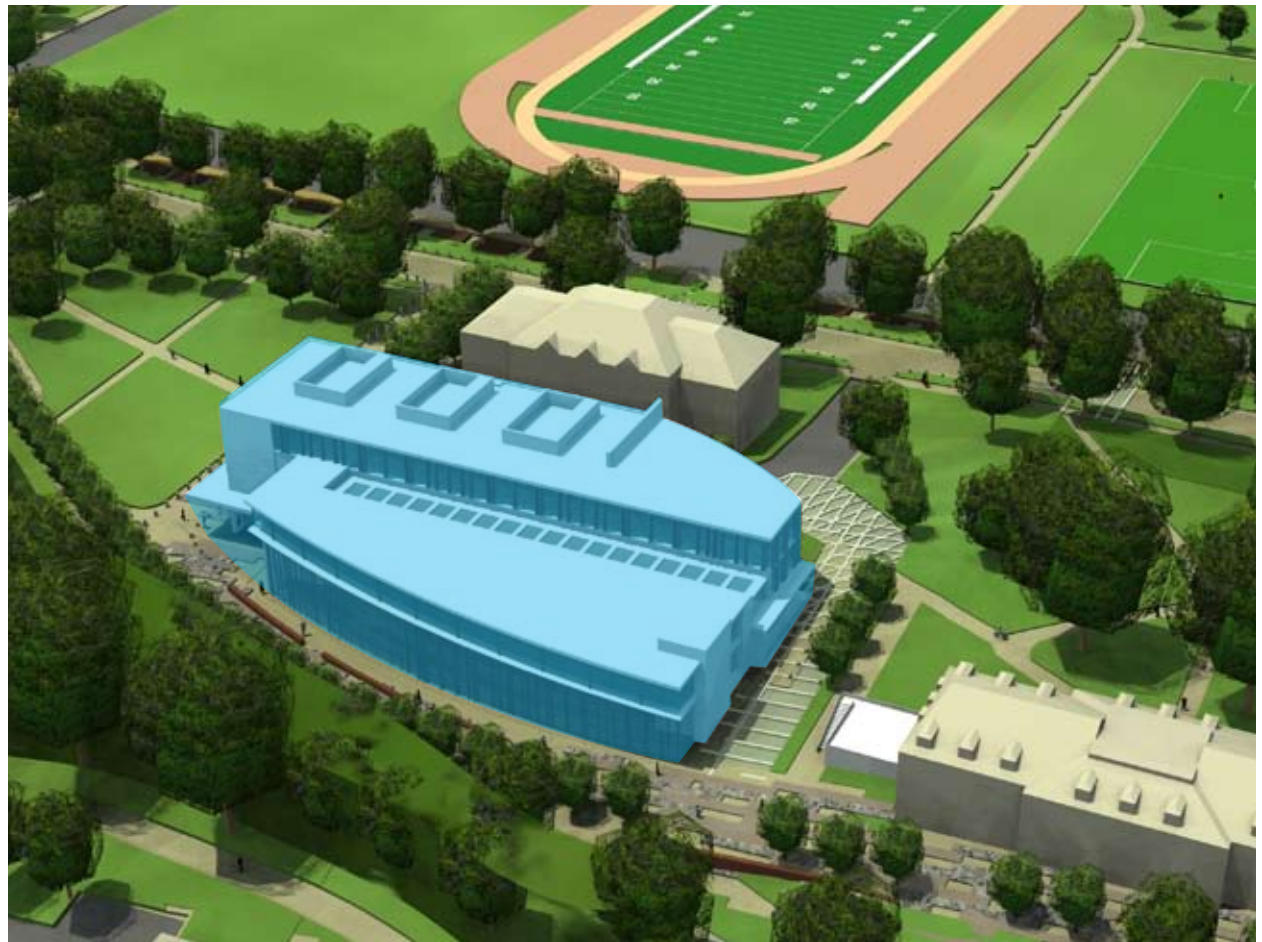
The new facility could be developed in two optional locations. Development on either location would be coordinated with staged renewal and renovation projects for Bradfield and Emerson Halls to upgrade laboratory environments.



Option 1



Option 2



The Environmental Sciences Research Facility (Option 1)

**Option 1:**

The first location is adjacent to Fernow and Rice, and would require the decommissioning and demolition of Bruckner, the Poultry Houses, Little Rice and portions of the existing surface parking lot (see Figure 8.3). The facility could potentially be integrated with Rice Hall, which could accommodate associated dry uses. This project builds upon the planned investment in Fernow and Rice, ensures proximity to the Tower Road greenhouses, and establishes a key lab resource mid-way between two College anchors: the Ag Quad and the Wing Drive building cluster. Site development will maintain or enhance existing access for fire, servicing and ADA compliance.

**Option 2:**

The second location is across from Rice Hall on Tower Road, currently occupied by the Robert J. Kane Sports Complex (see Figure 8.3). This site would likely be developed in partnership with other College or university initiatives. As outlined in the campus master plan, this site would ideally be developed as a mixed use building with residential uses above. Relocation of the sports complex



**Figure 8.3: Environmental Sciences Teaching and Research Facility optional sites**

and surface parking would be required prior to development. The campus master plan also identifies a new road along the western edge of the site that may be implemented with the development of this site.

Bldg Level	New Building (GSF)	New Building (NASF)
B	31,500	19,688
1	31,500	19,688
2	31,500	19,688
3	31,500	19,688
4	16,800	10,500
<b>Totals</b>	<b>142,800</b>	<b>89,250</b>

**Table 8.2: Environmental Sciences Teaching and Research Facility assignable and gross floor areas**

### 8.1.3 Food & Energy Systems Teaching and Research Facility

The scope of this project includes the development of a new laboratory facility on the East Campus, integrated with either Wing Hall or Morrison Hall. With an approximate net area of 69,900 nasf (111,900 gsf), the project will accommodate serviced laboratories for teaching and research (see table 8.3). Improved teaching and research facilities in this area would forge a stronger link between the Ag Quad and the East Campus activities and those housed in the Caldwell Road complex and large animal facilities. The project would also build on the investment being made in Stocking Hall.

There are two options for accommodating new Food & Energy Systems research space. Both options are extensions of existing buildings, and both involve the divestment of Riley Robb Hall. Because of the low intensity of development in this area of campus, both optional sites offer increased flexibility in terms of site planning and building design relative to the Life Sciences and Environmental Sciences building sites. Divestment of Riley Robb will free up a potential development parcel for the university in the East Center



Option 1



Option 2



The Food & Energy Systems Research Facility - Option 1

**Option 1:**

The first option is the Wing Hall Wing and Livestock Pavilion site, immediately east of Wing Hall (see figure 8.4). The new building would be integrated with the Wing Hall renovation and restoration project, completing the update of CALS' historic structures. Development should be consistent with the directions of the campus master plan, including provision for active uses at grade along Wing Road and potential below-grade service access from Judd Falls Road. Detailed site service planning can occur in the site planning stage. Morrison and Riley-Robb Hall will continue to be used during construction, following which Riley-Robb Hall and the single-storey portions of Morrison Hall may be decommissioned (see Figure 8.4). Decommissioning of Riley Robb would make available a potential development site for the university.

**Option 2:**

The second option sees an expansion of Morrison Hall (see figure 8.4). The existing Morrison Hall would be renovated to accommodate dry uses, exclusively, and the single-storey portions would be demolished. Riley-Robb Hall would be



**Figure 8.4: Food & Energy Systems Teaching and Research Facility optional sites**

decommissioned following completion of the new facility, which would make available a potential development site for the university.

Bldg Level	New Building (GSF)	New Building (NASF)
B	14,700	9,188
1	32,400	20,250
2	32,400	20,250
3	32,400	20,250
<b>Totals</b>	<b>111,900</b>	<b>69,938</b>

**Table 8.3: Agricultural and Food Systems Teaching and Research Facility assignable and gross floor areas**

## 8.1.4 Ithaca Greenhouses, East Campus and the Countryside Campus Precinct

### Ithaca Greenhouses

Renewal of the Ithaca Greenhouses involves a three-step process involving expansion of the Guterman complex, complete replacement of the Tower Road Greenhouses and related facilities, and the protection of lands along Dryden Road/Route 366 for long-term greenhouse development.

- **Near-term:** Expand and renew the Guterman Greenhouse Complex to the north and southeast to take advantage of capacity of the existing head-house and support infrastructure and will provide swing space for the renewal of the Tower Road Greenhouses
- **Near-term:** Demolish and replace the Tower Road Greenhouses with state-of-the-art facilities. This location is reserved primarily for teaching greenhouses in order to be close to CALS classrooms and teaching laboratories.
- **Long-term:** The greenhouse area south of Dryden Road/Route 366 identified in the campus master plan will be required in the long term for additional greenhouse development. This site can accommodate capacity lost on the Tower Road site due to topographic constraints. It is not expected that this area will be developed within the 20-year planning horizon.

### East Campus and the Countryside Campus Precinct

East Campus and the Countryside Campus Precinct contain a diverse range of often interrelated uses. With development pressure on East Campus and expanded rural program requirements, the Countryside Campus Precinct offer a considerable opportunity for the reorganization of CALS' facilities and the incorporation new uses, such as greenhouses and animal-related teaching facilities.

A number of significant initiatives and big moves are currently underway. These initiatives support ongoing efforts to consolidate and increase efficiencies in countryside facilities and activities.

- Planning for the Large Animal Teaching Center (LATC) is underway, including new road and site improvements. Uses in the existing Livestock Pavilion would be relocated to this general location.
- The preferred location for the CURBI bio-energy initiative has been identified immediately south of the LATC initiative.
- Farm Services activities and associated resources continue to be consolidated on Stevenson Road, including the relocation of field uses currently east of East Hill Village.
- Redevelopment of the swine farm is planned in the Game Farm Road complex.

Some of the East Campus and Countryside Campus Precinct are home to other uses and users. As a general rule, existing research lands and natural areas will be protected from new uses and activities.

Major directions for the East Campus and Countryside Campus Precinct include the following, as illustrated on Figure 8.5.

- Decommission facilities over the long-term, including the Swine Farm Complex, Turkey Hill Road, Ellis Farm and the Farm Services Shop Complex.
- The Game Farm Road Complex offers opportunities for new development given its proximity to Core Campus, its secluded setting, its connectivity to the Stevenson Road complex and its planned location for the redevelopment of the swine farm complex.
- The planned development of LATC and CURBI facilities on the western edge of this area reinforce its potential for more intensive use over the long-term for a range of research and production activities related to animal science and renewable bio-energy.



## 8.1.5 Ithaca Campus Landscape Renewal

The network of open spaces and other settings that provide both amenity and identity for the College are a significant asset for the College and University, and reflect almost 100 years of stewardship and investment. The Ag Quad, anchored by Mann Library, is CALS' home. It is inextricably linked to the College, physically, programmatically, and in the hearts and minds of thousands of faculty, students, and alumni.

On the Ithaca Campus, the renewal and growth of CALS' facilities will take place within a larger framework of campus renewal. The campus master plan provides this framework, outlining considerations related to development opportunities, land uses, transportation, and landscape and open space. Coordination of CALS initiatives within this larger campus framework will ensure the successful evolution of the College within an enhanced campus environment. Costs associated with landscape renewal should be considered in the development process.

A major focus of the campus master plan is the renewal of the campus environment through landscape enhancement. A number of landscape initiatives interface with the renewal of CALS' facilities, including the Tower Road, Ag Quad and Fernow Walk landscapes. Implementation of these initiatives will be linked to CALS' major capital project development and university-wide building and infrastructure projects. In addition to these major initiatives, a series of other landscape projects, such as the Fernow Green and the East Center Green initiatives, should be considered with new developments.

### Tower Road

Major renovation and new development projects along Tower Road will contribute to the enhancement of this streetscape initiative. New tree plantings, pedestrian improvements, street furniture and other landscape elements will contribute to the long-term renewal of this streetscape. Development projects also offer opportunities to enhance relationships between buildings along Tower Road and the street.

### Ag Quad

Rehabilitation of the Ag Quad will be triggered with the renewal of the Plant Sciences Building and the proposed new Translational Science building. While mostly intact, this landscape can see improvement through enhanced pedestrian connections and stronger relationships to landscapes beyond the edges of the Quad. A restoration plan should be developed to address lighting, pathways and plantings to ensure consistency in the Ag Quad landscape.

### Fernow Walk

The Fernow Walk landscape will renew an important access route for the CALS community. Currently a "backdoor" service route to Mann Library, the walk will be improved as an important linear connection from the environmental science cluster and east campus to Mann Library and the Ag Quad. It will provide an important north facade to the environmental science cluster while delineating the southern edge of Plantations. It will be designed to accommodate service, loading and emergency vehicles, but will have the character of a landscaped pedestrian walkway.

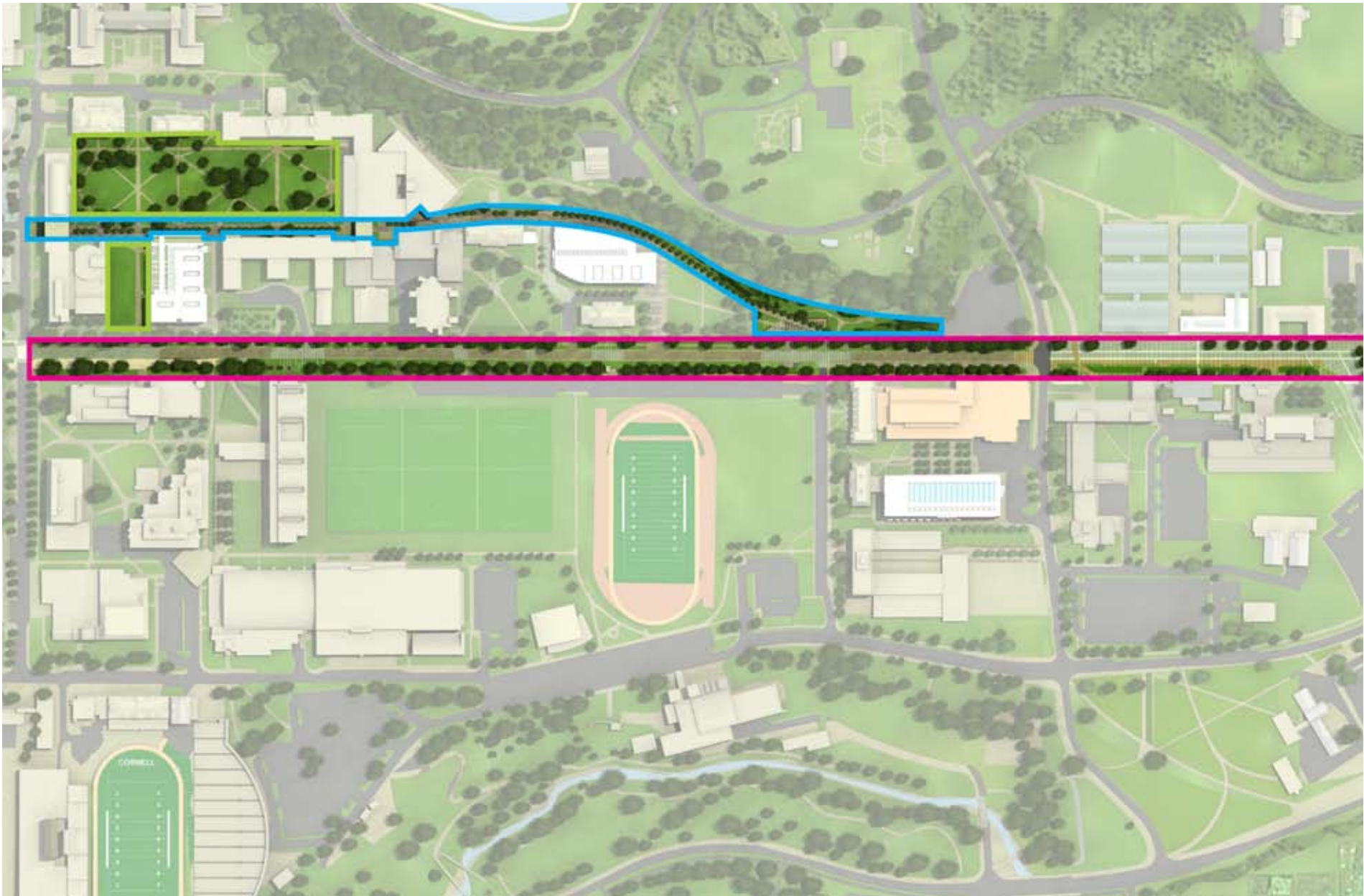


Figure 8.6: Landscape renewal should occur in tandem with major capital projects.

Major Capital Project	Academic Cluster	Parcel Location (campus master plan)	Campus Master Plan Maximum Site Capacity (GSF)	FMP Building Area (GSF) <sup>1</sup>
CCC and Caldwell Hall phased occupancy	Economic & Community Vitality	CCC and Caldwell Hall	135,576	91,416
Translational Science Building and Plant Science renewal	Life Sciences	Parcel 6C, 6D	377,008	355,796
Environmental Science Building (Option 1)	Environmental Sciences	Parcel 6E	101,400	142,788
Environmental Science Building (Option 2)	Environmental Sciences	Parcel 8A (north portion)	214,200 <sup>2</sup>	142,788
Food & Energy Systems Research Facility (Option 1)	Food & Energy Systems	Parcel 8B (south portion)	425,283 <sup>3</sup>	139,839
Food & Energy Systems – Morrison renewal and expansion (Option 2)	Food & Energy Systems	Parcel 9B	282,750	233,695
Greenhouse Area 1		Parcel 9A	118,000	118,750
Greenhouse Area 2		Parcel 20B	166,912	101,547
Greenhouse Area 3		Parcel 20C	209,280	TBD <sup>4</sup>

**Table 8.4: Campus Master Plan/Major Capital Projects Implementation Matrix**

*Notes:*

- 1 Gross floor area estimate generated from net assignable floor area requirements and may include both existing buildings and/or new development.
- 2 Estimate based on 1/3 of permitted gross floor area on parcel 8A.
- 3 Estimate based on 2/3 of permitted gross floor area on Parcel 8B.
- 4 Greenhouse Area 3 is to be protected for long-term greenhouse development. Greenhouse development in this area is not expected in the FMP's 20 year planning horizon.

**Campus Master Plan Integration**

The major capital implementation matrix (Table 8.4) provides a link between the Ithaca Campus FMP major capital projects and associated campus renewal projects identified in the Campus Master Plan. This matrix reflects the Development Matrix contained in the campus master plan to ensure effective coordination and planning with the campus master plan and the university planning office.

While this plan is aligned with the campus master plan, there are two planning recommendations that depart from the direction contained in the campus master plan. This plan recommends that Parcel 9A remain for greenhouse uses (Greenhouse Area 1), whereas the campus master plan proposed academic development for this site. This plan also recommends that no development be considered on Parcels 6A and 6B, located adjacent to and north of Caldwell and Warren Halls. It is recommended that the campus master plan be amended to reflect these refinements. The Fernow Walk landscape initiative is also in addition to those already identified in the campus master plan.

Uses	Enabling Projects	Concurrent Projects	Implementation Opportunities
<ul style="list-style-type: none"> <li>• Dry uses - office, teaching, other</li> <li>• Central administration overflow from Roberts Hall</li> </ul>	<ul style="list-style-type: none"> <li>• Relocation of existing non-CALS users</li> </ul>		<ul style="list-style-type: none"> <li>• Consolidation of central administrative uses will free up dry space in other academic buildings</li> </ul>
<ul style="list-style-type: none"> <li>• Research and teaching wet lab</li> </ul>		<ul style="list-style-type: none"> <li>• Tower Road landscape initiative</li> </ul>	<ul style="list-style-type: none"> <li>• Staged renewal of Comstock, Corson-Mudd, Biotech, as needed</li> <li>• Near-term temporary surge space for Environmental Science uses</li> </ul>
<ul style="list-style-type: none"> <li>• Research and teaching wet lab</li> </ul>	<ul style="list-style-type: none"> <li>• Demolition of Bruckner Lab, Little Rice, Poultry Houses and surface parking</li> </ul>	<ul style="list-style-type: none"> <li>• Tower Road landscape initiative</li> <li>• Fernow Walk landscape initiative</li> </ul>	
<ul style="list-style-type: none"> <li>• Research and teaching wet lab</li> </ul>	<ul style="list-style-type: none"> <li>• Relocate Robert J. Kane Sports Complex (track and soccer field)</li> <li>• Relocate on-street parking facilities</li> <li>• Develop a shared below-grade service court</li> </ul>	<ul style="list-style-type: none"> <li>• Tower Road landscape initiative</li> <li>• East Center Green initiative</li> <li>• Campus circulator stop</li> <li>• Rice Drive initiative</li> </ul>	
<ul style="list-style-type: none"> <li>• Research and teaching wet lab</li> </ul>	<ul style="list-style-type: none"> <li>• Relocate Livestock Pavilion</li> <li>• Temporarily relocate Wing Hall Wing uses</li> <li>• Develop a shared below-grade service court</li> </ul>	<ul style="list-style-type: none"> <li>• Mid-Campus Walk initiative</li> <li>• East Center Green initiative</li> </ul>	
<ul style="list-style-type: none"> <li>• Research and teaching wet lab</li> </ul>	<ul style="list-style-type: none"> <li>• Temporarily relocate Morrison Hall uses</li> </ul>	<ul style="list-style-type: none"> <li>• Tower Road landscape initiative</li> <li>• Mid Campus Walk initiative</li> <li>• Judd Falls Greenway master plan</li> </ul>	
<ul style="list-style-type: none"> <li>• Greenhouses and related facilities</li> </ul>	<ul style="list-style-type: none"> <li>• Remove and replace Kenneth Post Greenhouses</li> </ul>	<ul style="list-style-type: none"> <li>• Tower Road landscape initiative</li> <li>• Judd Falls Greenway master plan</li> <li>• Campus circulator stop</li> </ul>	
<ul style="list-style-type: none"> <li>• Greenhouses and related facilities</li> </ul>	<ul style="list-style-type: none"> <li>• Remove and relocate existing campus service buildings and sheds</li> </ul>		

## | 8.2 NYSAES Geneva Major Capital Project Development

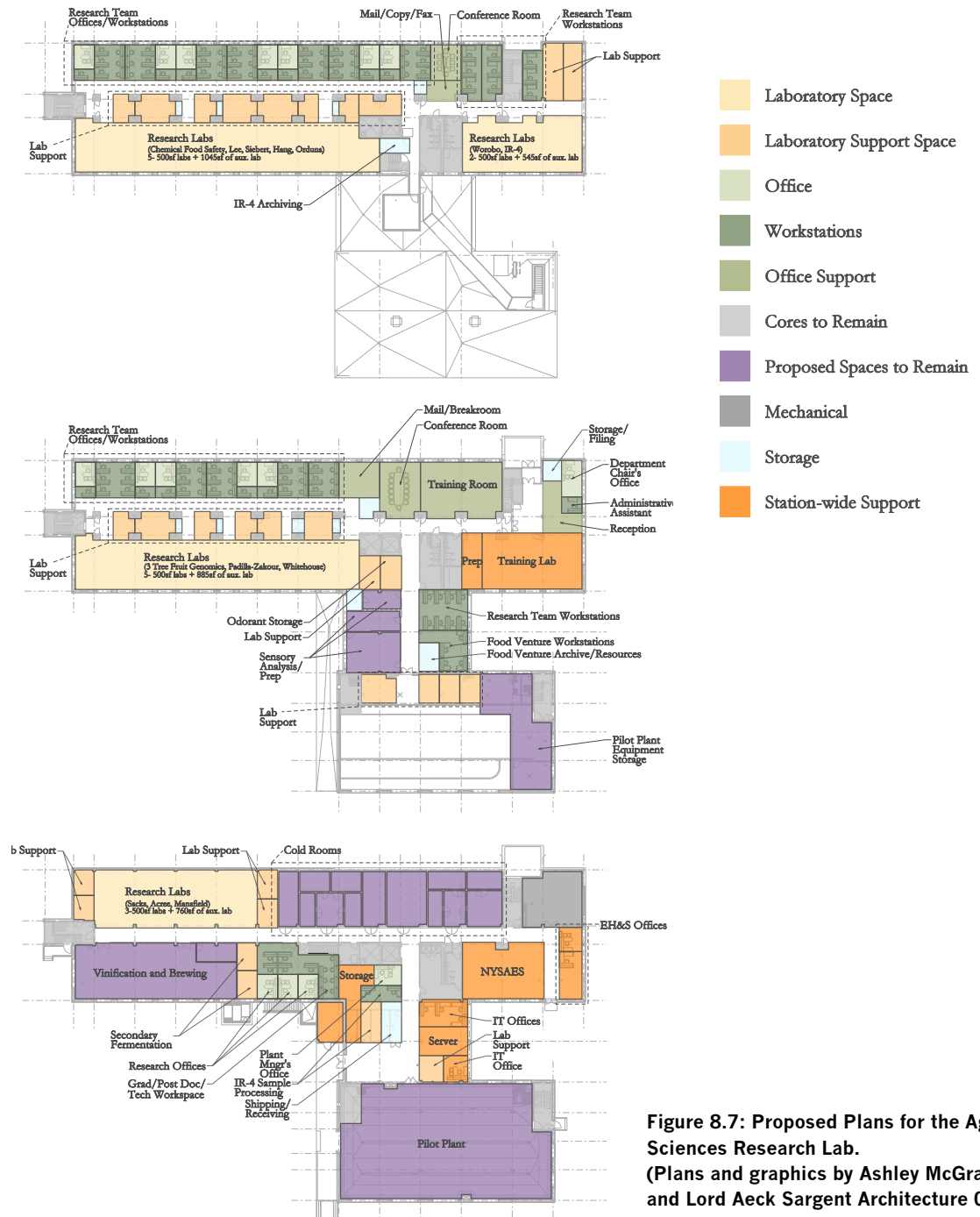
### 8.2.1 Agricultural Sciences Research Laboratory

The planned renovation of the Agricultural Sciences Research Lab at NYSAES Geneva will provide an upgraded laboratory facility for the campus. Through major internal structural changes, including shifting primary circulation corridors, the project will consolidate and expand wet laboratory space and will provide flexibility to accommodate a wide range of research uses. This will arrange multiple labs in single, open grouping, ensuring flexibility to accommodate changing research assignments. Improvements to offices and other dry uses will occur through consolidation and modern furnishings. Generally, the renovation will support improved wayfinding and provide increased opportunities for interaction between researchers. The planned renovation will include a major overhaul of all mechanical systems. Despite internal improvements, the footprint of the new Agricultural Sciences building will not be significantly changed.



Architect's rendering of the planned renovation of the Agricultural Sciences Research Lab

The renovated Agricultural Sciences Research Lab will include 48,205 nasf (82,905 gross square feet). It will accommodate a total of 31,259 nasf for research uses, including research labs, specialized labs and support space. In addition, it will accommodate a total of 16,946 nasf for dry uses, including office, teaching, extension and building support uses.



**Figure 8.7: Proposed Plans for the Agricultural Sciences Research Lab.**  
(Plans and graphics by Ashley McGraw Architects and Lord Aeck Sargent Architecture 07/10/08)

## 8.2.2 NYSAES Geneva Greenhouses and Countryside

### NYSAES Geneva Greenhouses

Greenhouse Area 1 includes the existing greenhouse cluster in the center of campus. Due to building condition issues, significant renewal is required. A comprehensive site plan for the renewal of this area should be developed and should consider:

- Integration with the newly constructed Horticulture greenhouses;
- Potential integration with a future laboratory facility on the northern portion of the site; and
- An appropriate location for a central headhouse and service access from Castle Creek Drive.

Greenhouse Area 2 includes a southern expansion of the existing greenhouses south of Barton Laboratory. This site offers a large area for greenhouse expansion that is unencumbered by existing facilities and/or uses. It is not expected that this area will be developed within the 20-year planning horizon. Site design should consider:

- Incorporation of the existing greenhouses while allowing for their eventual replacement;
- Maintaining connectivity to Barton Laboratory;
- An appropriate location for a central headhouse and service access from Castle Creek Drive.

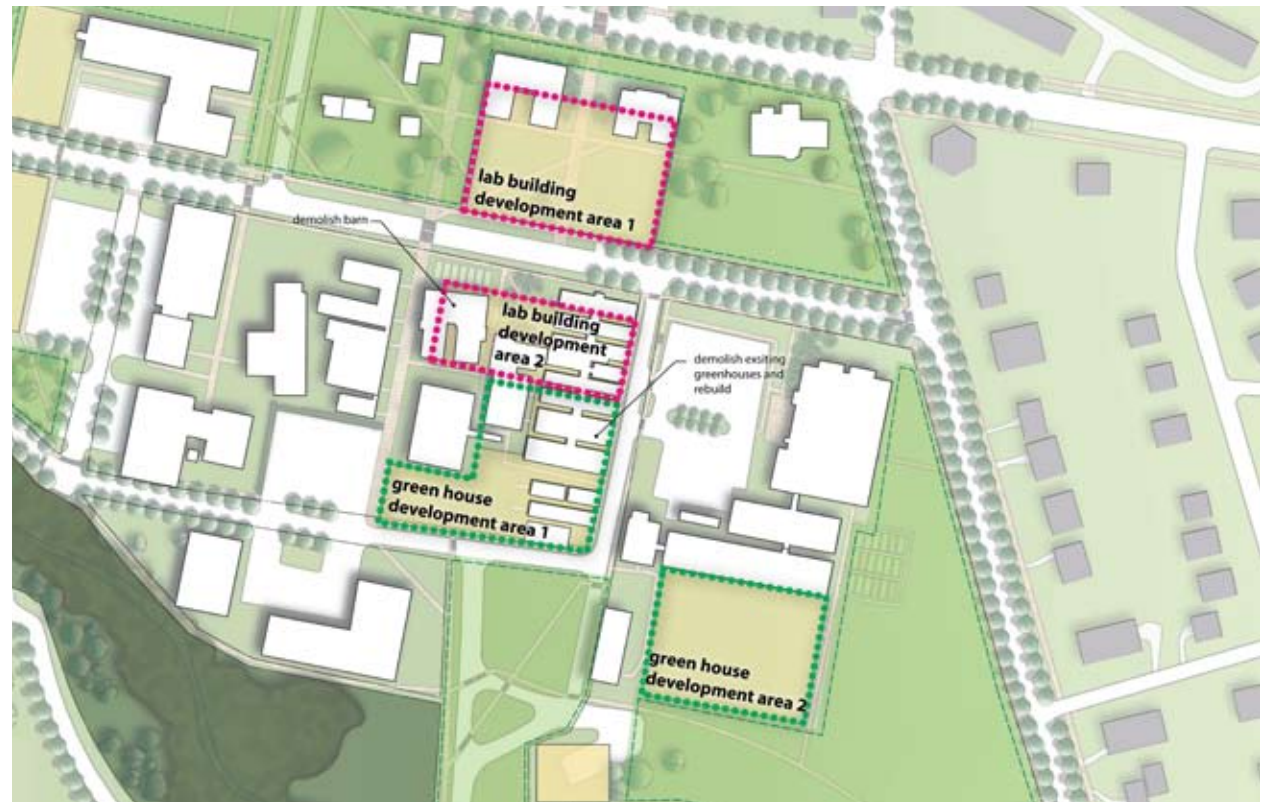


Figure 8.8: NYSAES Geneva greenhouse development areas

## Geneva Countryside

The close relationship between the NYSAES Geneva campus and the countryside research fields is a great asset and contributes to the success of research and extension activities. This relationship can be protected and enhanced by implementing the following directions

- **Consolidate Operations:** Further consolidation of operations through divestment and acquisition may occur as NYSAES Geneva refines its land base to match research needs. Where possible, internal field circulation networks should be maintained. Special consideration may be given to organic agriculture activities.
- **Obtain the best land to support NYSAES Geneva's activities:** As the research interests of NYSAES Geneva evolve and expand beyond fruit and vegetable research, acquisition of new field resources may be required. Soil type and quality should continue to meet the NYSAES Geneva's long-term research needs, and fields should remain within a three to five mile radius of campus. Special consideration may be made for unique soil needs, including opportunities to partner with existing CALS remote research fields and facilities.

- **Protect agricultural lands from urban encroachment:** Continued support for agricultural land protection will protect NYSAES Geneva's agricultural research activities and strategic location. Areas subject to development pressure should be closely monitored to ensure that future uses do not negatively impact NYSAES Geneva's activities. Where field activities are in close proximity to existing non-farm uses, potential adverse impacts should be minimized.

The Research Farm North at the heart of the NYSAES Geneva field resources is the logical location for concentrating and investing in field support buildings. Decommissioning can be pursued at outlying farms, including Crittenden, Darrow, Loomis and Robbins Farms.

### 8.2.3 NYSAES Geneva Campus Landscape Renewal

The NYSAES Geneva Campus development framework was prepared through the FMP planning process and is based on current and ongoing campus planning and development initiatives. The framework serves as a basis for campus and landscape renewal in coordination with facility investments. The development framework was based on a series of campus planning directions that were confirmed in the on-campus planning workshop.

#### Campus Planning Directions:

- 1. Build from what you have today:** Incrementally enhance, re-purpose and add to existing facility and field resources to meet current needs.
- 2. Preserve and enhance key open spaces:** Identify and enhance the wide variety of open space on campus to strengthen the Station's unique character and provide benefits for the university and surrounding community.
- 3. Preserve historic structures:** Where feasible, retain historic structures that reflect the Station's vibrant past while reinventing their use to meaningfully contribute to the activities of the Station.

#### 4. Improve the existing street and parking network:

Create stronger definition for the street network and enhance gateways to support effective circulation and contribute to wayfinding and placemaking.

#### 5. Identify locations for new development:

Identify potential for large building sites within the existing campus structure to allow for new labs, greenhouses and other facilities.

#### 6. Promote NYSAES Geneva's role as countryside advocate:

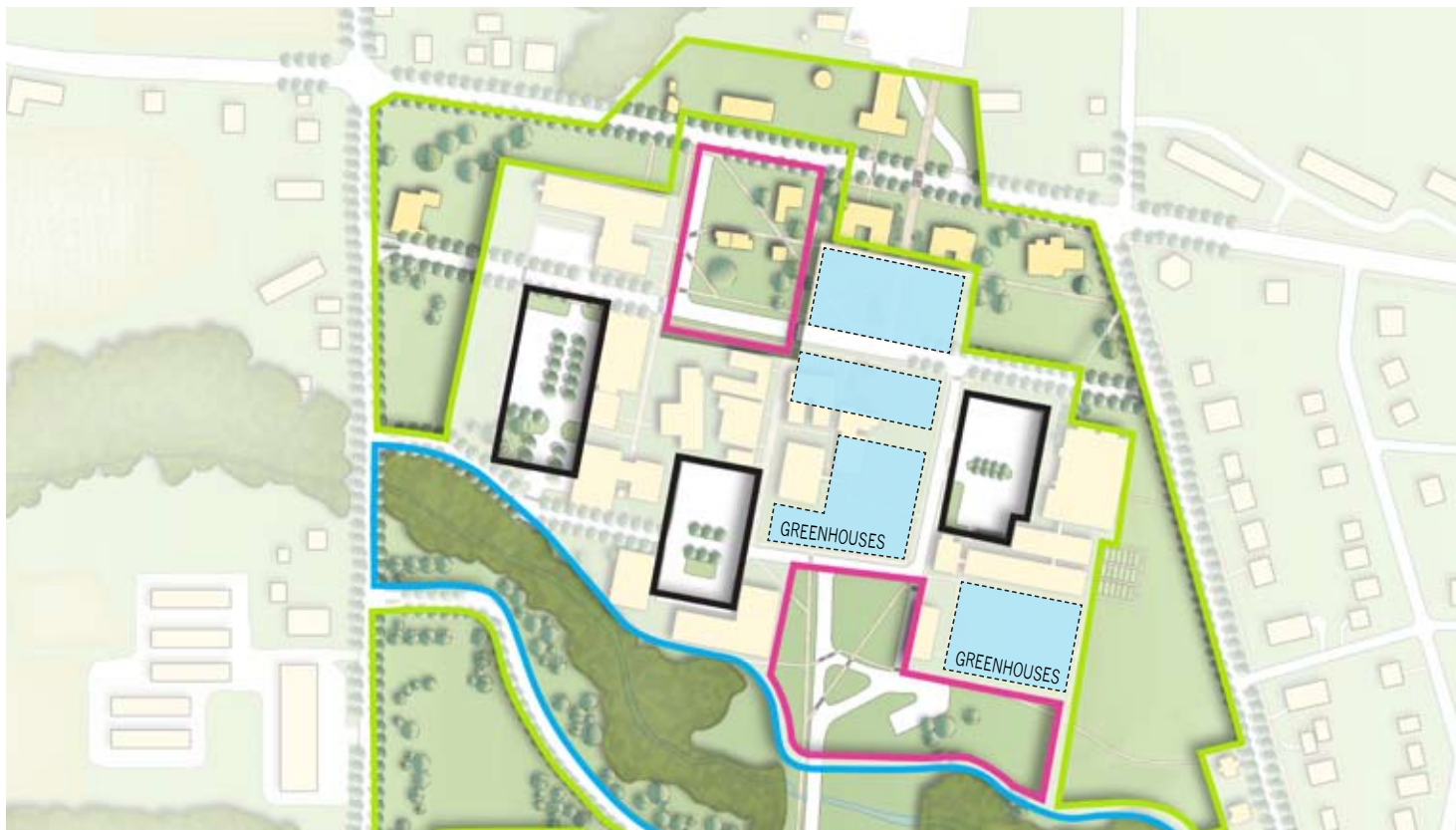
Protect the research field assets, continue to consolidate the field-base and enhance connectivity to and within the countryside resources. Ensure that surrounding urban development does not adversely impact research activities while minimizing farming impacts on neighbors.

Figure 8.7 illustrates how the development framework might be realized, including campus and landscape renewal and potential new development sites. A streamlined street and sidewalk network will clarify campus circulation, as will consolidated parking lots, yards and service areas.

Open space, landscape and streetscape improvements will enhance the campus setting and create new opportunities for recreation, relaxation and community engagement. Specific development sites have been identified for laboratory and greenhouse developments, in addition to several additional development sites for future use. Restoration and reuse of smaller heritage buildings is anticipated for potential non-research uses.

The development framework should be approached comprehensively. Open space improvements, service access, infrastructure investments, heritage preservation and reuse, and other initiatives should be considered in concert with development initiatives, ensuring that the campus evolves as a cohesive whole.

Relationships to areas surrounding the campus should also be considered. Enhanced wayfinding, clarity around primary campus entrances and enhanced landscapes around the campus edges will improve community connections and reinforce NYSAES Geneva's place in the surrounding City and Town of Geneva.



- Development sites
  
- Landscapes**
- Castle Creek riparian buffer zone
- community greens
- gateway lawns
- works yards

Figure 8.9: Development framework for NYSAES Geneva

## | 8.3 Capital Investment and Strategic Divestment

### 8.3.1 Capital Project Implementation

#### Deferred Maintenance

Deferred maintenance costs are a significant challenge for CALS. The Ithaca Campus and surroundings face nearly \$150 million in deferred maintenance costs, as identified through the building condition assessment. Similarly, NYSAES Geneva and surroundings face over \$23 million in deferred maintenance costs. To ensure high quality facilities for all of CALS' activities, a significant allocation of resources must be applied to address both current deferred maintenance and the continued attrition of all facilities.

Strategic divestment is an effective means for reducing the total required deferred maintenance. By shifting funds away from poor quality and underutilized resources, the College can reduce deferred maintenance costs by nearly \$50 million. The strategic divestment opportunities identified in this plan (and summarized in section 8.3.2) have been carefully identified to ensure high quality facilities for teaching and research, to streamline countryside operations and minimize inefficiencies in operations and spending. Divestment will not adversely impact the academic mission of the College.

In addition to strategic divestment, in limited cases, budget allocation for deferred maintenance can be reallocated to major restoration and renovation. In this way, funding needs for building maintenance can be reduced in place of major capital project funding for full-scale building renewal. This applies to just three facilities on the Ithaca Campus, the Plant Science Building, Wing Hall and Morrison Hall, but allows the reallocation of over \$60 million in deferred maintenance needs toward major capital renewal of these three facilities. While the major capital renewal projects will require funding greater than deferred maintenance allocations, reallocation provides new funding mechanisms and opportunities while ensuring full-scale building renewal over piecemeal upgrades.

Based on the recommendations for strategic divestment and full-scale building renewal, the total deferred maintenance requirements for CALS's facilities is significantly reduced. Table 8.5 summarizes the opportunities for minimizing deferred maintenance budget allocations.

Annualized over the 20-year planning period, the annual total deferred maintenance cost for Ithaca

and Geneva is \$8.5 million. Exempting divestment and major capital renewal projects, this can be reduced to an average of \$3 million per year, though a higher level of investment will be required until 2015 to address high priority deferred maintenance needs.

It is important to note, however, that this analysis does not reflect all factors that contribute to deferred maintenance. The following factors should be considered in decision-making regarding deferred maintenance:

- Not all of CALS' facilities were included in the building condition assessment process.
- All buildings, including new capital projects, are subject to continued wear and will have ongoing and new maintenance needs.
- All deferred maintenance needs have been expressed in 2010 dollars.

As decisions are made regarding major capital projects, including currently planned/committed capital projects and the new projects identified in Sections 8.1 and 8.2, the potential for increased deferred maintenance costs must be considered. If building renewal or strategic demolition decisions

Implementation of the major capital projects will reduce deferred maintenance spending and better align CALS' facilities with the College's academic activities.

are not implemented in a timely fashion, further deferred maintenance funds will be required for building upkeep in the interim.

Ithaca Campus	
<b>Total deferred maintenance (building condition assessment)</b>	<b>\$148 million<sup>1</sup></b>
Major restoration and renovation projects	\$61.5 million
Demolition and Divestment	\$47.4 million
Remaining Deferred Maintenance	\$39.3 million
NYSAES Geneva	
<b>Total deferred maintenance (building condition assessment)</b>	<b>\$23 million<sup>2</sup></b>
Major restoration and renovation projects	--
Demolition and Divestment	\$1.7 million
Remaining Deferred Maintenance	\$21.7 million

**Table 8.5: Deferred Maintenance, Capital Investment and Strategic Divestment**

*Notes*

- 1 Does not include Harford, Freeville and Plantations facilities. Does not include buildings that were not assessed by Stantec, including planned/committed capital projects, such as Warren, Fernow, Rice and Stocking Halls.
- 2 Does not include the Geneva Agricultural Sciences Research Laboratory.

**Major Capital Projects**

The major capital projects identified in Sections 8.1 and 8.2 have been formulated in a manner that provides ongoing facility support for academic activities while engaging in continued implementation of capital renewal and new construction. Project identification and priority ensures that space requirements are met in all discipline areas and that new facilities provide additional capacity to accommodate displaced activities during building renewal.

Cost estimates for the FMP major capital projects have been determined using unit cost estimates provided by the College (Table 8.6). These values, which reflect actual project costs for similar projects on campus, are expressed in today's dollars and includes the cost of construction, related project costs and facility fit-out (i.e. equipment costs). The values do not take into account inflation or construction cost escalation.

	Wet Lab	Dry Lab/Office	Greenhouse
Building Renewal	\$660	\$410	NA
New Construction	\$725	\$460	

**Table 8.6: Unit cost estimates per square foot for major capital project implementation**

Table 8.7 and Figure 8.10 capture new major capital projects, including both the currently planned/committed projects and the new capital projects identified in the FMP. The former have already been included in the Contract College facility planning processes and are in various states of funding approval with SUCF.

In collaboration with SUCF, the Contract Colleges maintain a detailed capital projects priority list, which tracks all planned and funded capital projects across the Contract Colleges. All of the FMP major capital projects identified in Table 8.7 should be incorporated into the overall Contract College capital projects priority lists. Through this process, project details and priorities can be refined in conjunction with university-wide capital planning. Identification on this larger list is subject to changing priorities, new funding opportunities and other considerations.

## FMP Capital Projects Priority List

Discipline Area	Project	Project Type	Completion Date	Cost Estimate
<b>Confirmed Capital Projects</b>				
Ag. & Food Systems	Stocking Hall	Renewal/Addition	2016	\$100,225,000
Econ.& Com. Vitality	Warren Hall	Renewal	2015	\$60,000,000
Environmental Sciences	Fernow Hall	Renewal	2013	\$12,288,000
CALS	2011-12 Programmatic Improvements	Various	2012	\$22,800,000
<b>Designed/Planned Projects (Not in Cornell Capital Plan)</b>				
Ag. & Food Systems	Harford Phase 1: Freestall Barns	New Facility	2012	\$6,000,000
Environmental Sciences	Rice Hall	Renovation	2014	\$16,124,000
Ag. & Food Systems	Agricultural Science Research Laboratory	Renewal	2015	\$53,000,000
<b>FMP Capital Projects</b>				
Life Sciences	Integrative & Translational Sciences Facility	New Facility	2016	\$151,750,000
	Plant Science Building	Renewal	2019	\$60,059,000
Environmental Sciences	Research Facility	New Facility	2021	\$103,521,000
Ag. & Food Systems	Harford Phase 2: Facility Renewal	Renewal	2016	\$6,000,000
	Swine Farm Facility Replacement	New Facility	2016	\$8,160,000
	Livestock Pavilion	New Facility	2023	\$9,500,000
	Research Facility	New Facility	2026	\$81,110,000
	Wing Hall	Renewal	2026	\$11,465,000
Greenhouses	Morrison Hall	Renewal	2028	\$49,946,000
	Ithaca Greenhouse Area 2 (Phase 1)	Renovation/Addition	2014	\$5,889,000
	Ithaca Greenhouse Area 1 (Phase 2)*	New Facility	2019	\$21,494,000
	Geneva Greenhouse Area 1 (Phase 1)*	New Facility	2015	\$7,613,000
<b>Deferred Maintenance</b>				
Ithaca	Annualized over 20-year planning horizon			\$39,300,000
Geneva	Annualized over 20-year planning horizon			\$21,700,000

**Table 8.7: FMP Capital Projects List**

\* Assumes a distribution of 90% greenhouse space and 10% wet lab space

It is expected that the current Contract College facility planning process will integrate the CALS's capital project priority lists into the Contract College FMP. This will support detailed project budget forecasting and prioritization of capital investment across all four Contract Colleges and the university as a whole. The full Cornell University fiscal year 2011-2012 capital budget can be found in Appendix A6.

# FMP Capital Projects Priority Implementation Schedule

FMP Key Moves ■  
Project Implementation ■

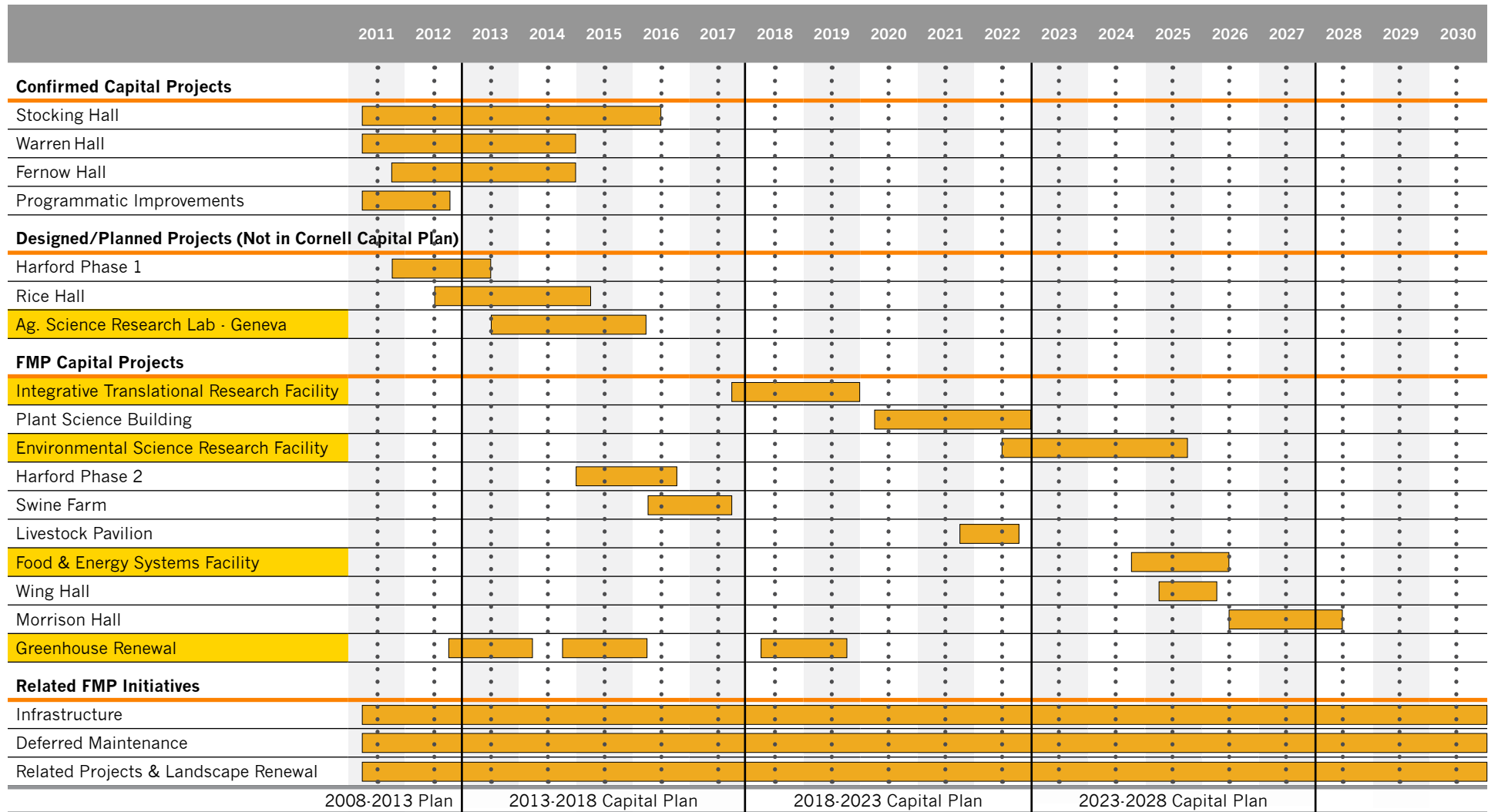


Figure 8.10: FMP Capital Projects Implementation Schedule

### 8.3.2 Strategic Divestment

The building condition assessment process identified a number of buildings in particularly poor physical condition that require significant investment and/or action.

These buildings were identified as priorities for change and their condition has informed planning work to date. Tables 8.8 and 8.9 provide a summary of buildings recommended for divestment.

### Strategic Divestment and Decommissioning List (Ithaca)

Bldg #	Building Name	Gross Area	Facility Planning Directions
<b>Core Campus</b>			
1070	Bruckner Laboratory	18,053	Facilities should be decommissioned and land should be made available as a potential development site for a new CALS lab/classroom building (Option 1).
1036	Little Rice	2,415	
1031F, G	Poultry Houses	5,256	
1042W	Wing Hall Wing	33,148	Facilities should be decommissioned and land should be made available as a potential development site for a new CALS lab/classroom building (Option 1).
1043	Livestock Pavilion	14,360	
1064	Morrison Hall (partial)	18,669	Single-storey portions of the facility should be decommissioned and land made available as a potential development site for a new research facility (Option 2)
1047	CALS Surge Facility	9,545	Facility should be decommissioned
1062	Riley Robb Hall	112,049	Facility should be decommissioned
<b>Caldwell Road/Guterman Greenhouses</b>			
1910A, 1913, 1915, 1916, 1917	Orange Greenhouse Complex	16,084	Greenhouses should be replaced as part of the initiative to expand the Guterman complex (Greenhouse Area 2).
1068B3,E,F,G,H,J,K	Red Greenhouse Complex	9,587	
1910B, 1914	Plant Breeding structures	3,005	

Bldg #	Building Name	Gross Area	Facility Planning Directions
<b>Tower Road Greenhouses</b>			
1061A,B,C,H	Blue greenhouse complex	12,863	Facilities should be decommissioned as a part of the initiative to strategically replace the Tower Road greenhouse facilities (Greenhouse Area 1).
1061D,E,F,G,J,L,M, 1065, 1066, 1136, 1137	Blue academic and utility buildings	24,571	
1045B,E,F,H,J,K,M, P, 1134A,B	Green greenhouse complex	45,823	
1045A,G, 1134D	Green academic and utility buildings	20,864	
1060A,B,C,D,	Yellow greenhouse complex	25,326	
1060E,F, 1135	Yellow academic and utility buildings	19,345	
<b>Various Countryside Campus Precinct Facilities</b>			
1048, 1058, 1084A,B	Large Animal Teaching & Research Unit and Barn	36,147	Facilities should be divested in and the land should be left available for the Judd Falls Greenway Landscape Initiative, as identified in the Campus Master Plan.
1013B,C,D,F	Resource Ecology and Management Lab	13,809	Facilities should be replaced with adequate field support facilities as they offer an ideal location in relation to the main campus for this sort of activity.
1085A-E	Farm Services service buildings	26,115	Facilities should be divested in and ultimately relocated to a new consolidated Farm Services works yard on Stevenson Road. This site should be reserved for future greenhouse development (Greenhouse Area 3).
1087B	Vegetable Crop Building	1,666	Facility should be decommissioned
1101C, 2811E	Pomology Quonset, Trailer	4,345	Facilities should be decommissioned
<b>Turkey Hill Road</b>			
1112	PP/Ecology Systems Field Building	7,157	Facilities should be decommissioned
1114A	Schwardt Lab	10,244	
2730B,C,E	Turkey-related facilities	6,800	
2730G,J,K	Storage Sheds	486	
<b>Ellis Farm</b>			
2813A,C,F	Ellis Farm buildings	4,406	Facilities should be decommissioned
<b>Mount Pleasant Farm</b>			
2515B,C,D,E	Mount Pleasant West barns, house	5,846	Facilities should be decommissioned
2550B,D,F,G	Mount Pleasant East storage, house	13,164	

**Table 8.8: Strategic Divestment and Decommissioning List (Ithaca)**

## Strategic Divestment and Decommissioning List (NYSAES Geneva)

Bldg #	Building Name	Gross Area	Facility Planning Directions
<b>NYSAES Geneva</b>			
4914	Utility storage barn	17,401	Facilities should be decommissioned and land should be made available for new development, such as a service area for a new lab/classroom building
4910A,A-01,A-02, A-03,G,H,J	Greenhouse complex and headhouse	20,017	Facilities should be decommissioned to facilitate development of Greenhouse Area 1
4942, 4943, 4959, 4969, 4988, 4993	Geneva utility structures	14,605	Facilities should be decommissioned
<b>Field Facilities</b>			
4931A,B,C	Crittenden Farm Barns, Annex	10,298	Facilities should be decommissioned
4932	Darrow Farm Barn	3,338	
4933	Loomis Farm Barn	5,300	
4945	Robbins Farm Pole Barn	2,425	
4989,4989A	Gates Farm Barn, Shed	6,010	

**Table 8.9: Strategic Divestment and Decommissioning List (NYSAES Geneva)**





# A Appendices

- A1 Facility Master Plan Committee List and Structure
- A2 Building Assessment and Facility Space Planning Reference Guide
- A4 Building Condition Assessment Summary Matrix
- A4 Academic Space Quality Assessment Summary Tables
- A5 Sample HEGIS Code Tabulation
- A6 Cornell University Fiscal Year 2011-2012 Capital Plan



# B Additional Reports

The following additional reports were developed to support the facility master planning process and to serve as ongoing facility management tools. These reports can be requested from the CALS Facilities office.

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- B1 Building Condition Assessment Reports
- B2 Building Condition Assessment Database and Documentation (MS Access)
- B3 Ithaca and Geneva Space Programming Report
- B4 Space Allocation Model (MS Excel)
- B5 Occupancy Assumptions for Major Capital Projects