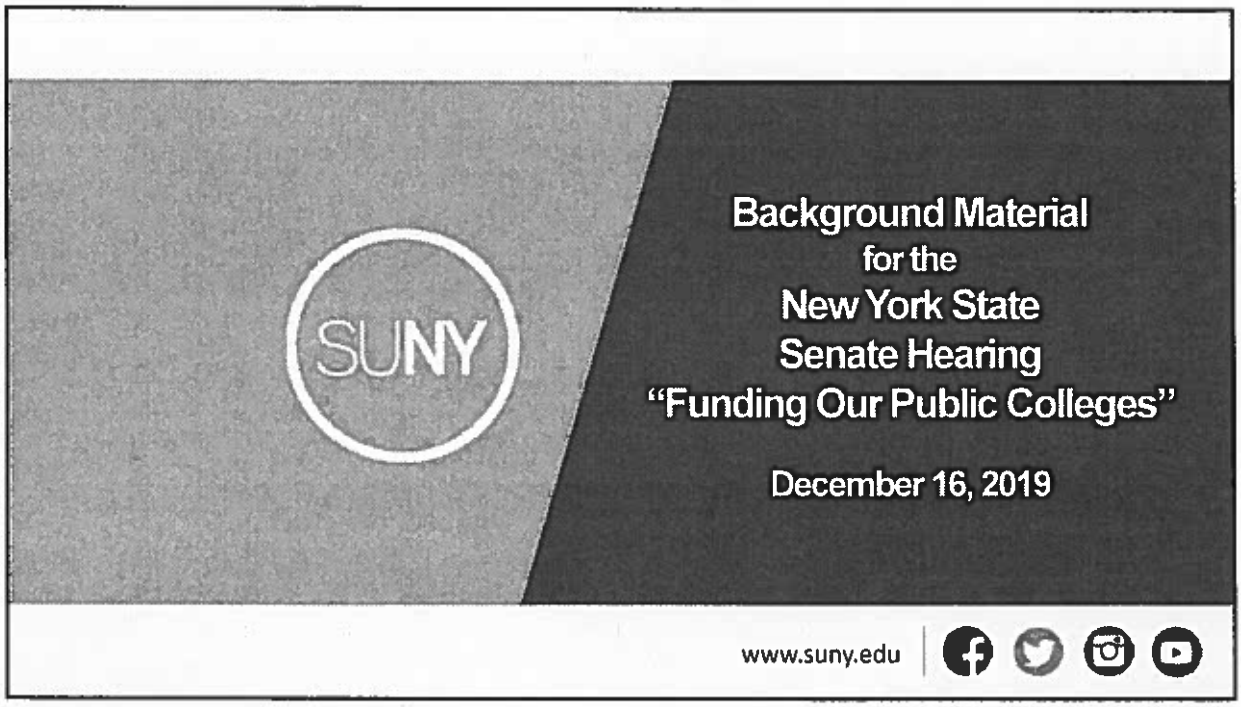
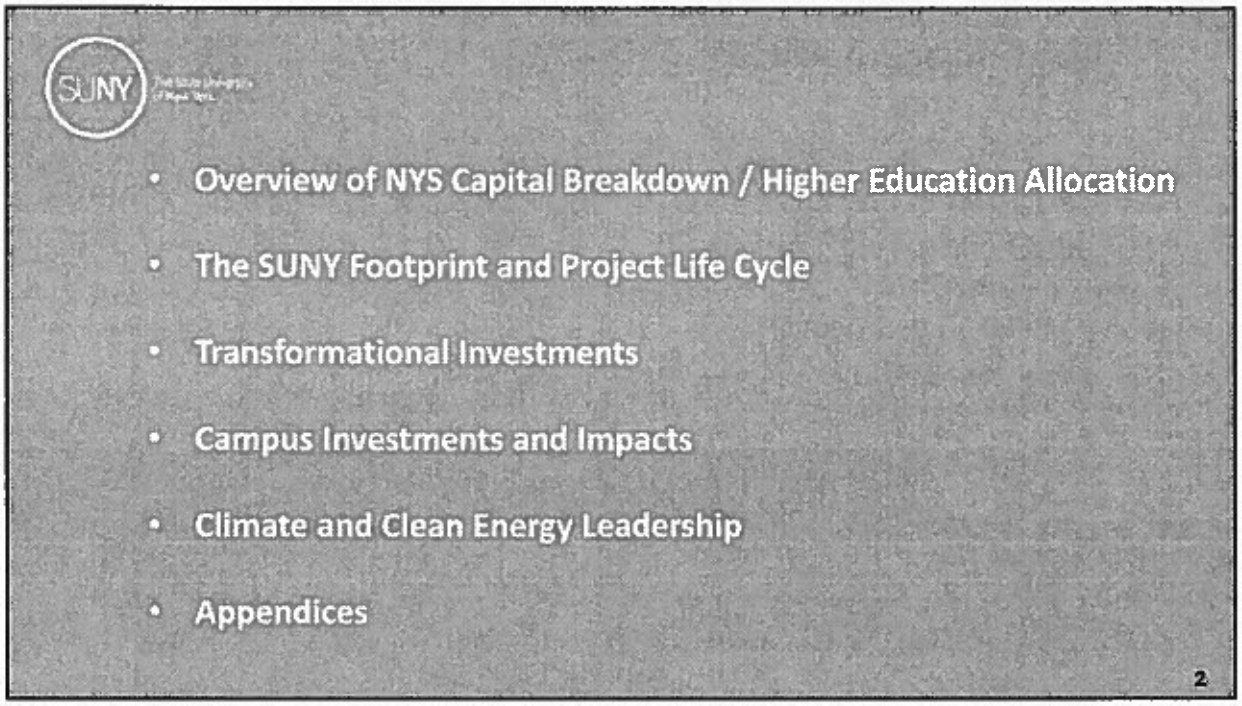
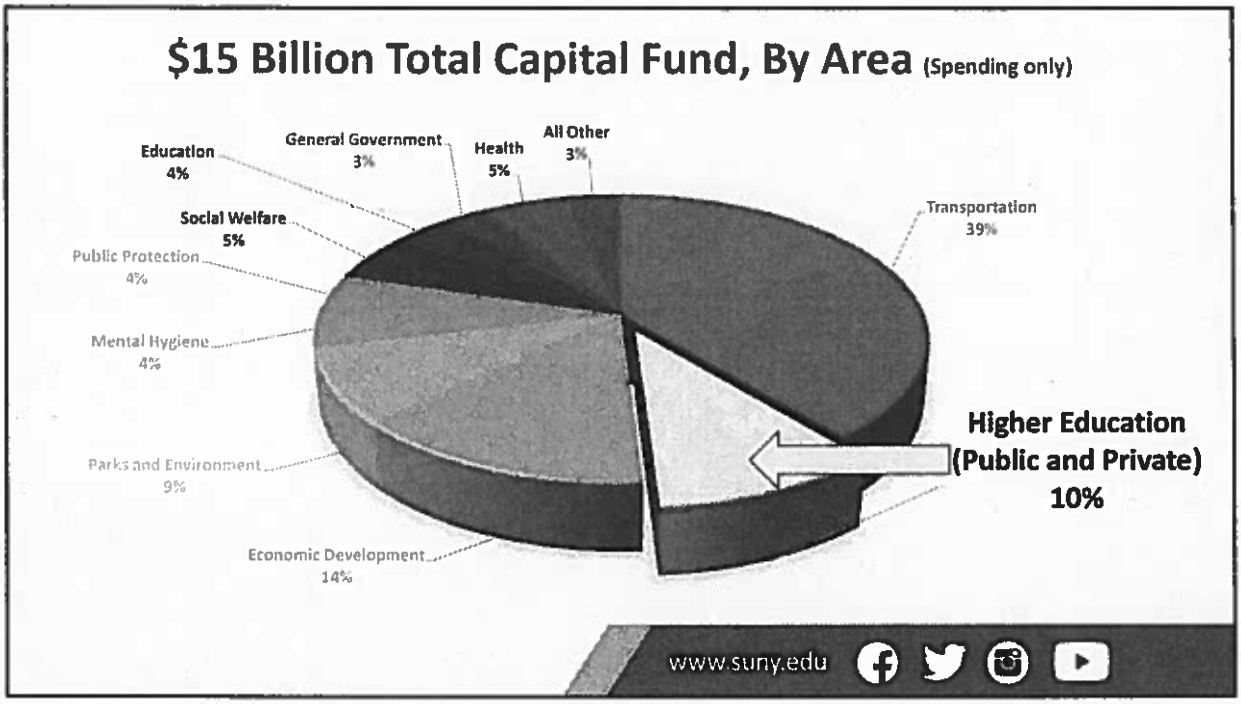
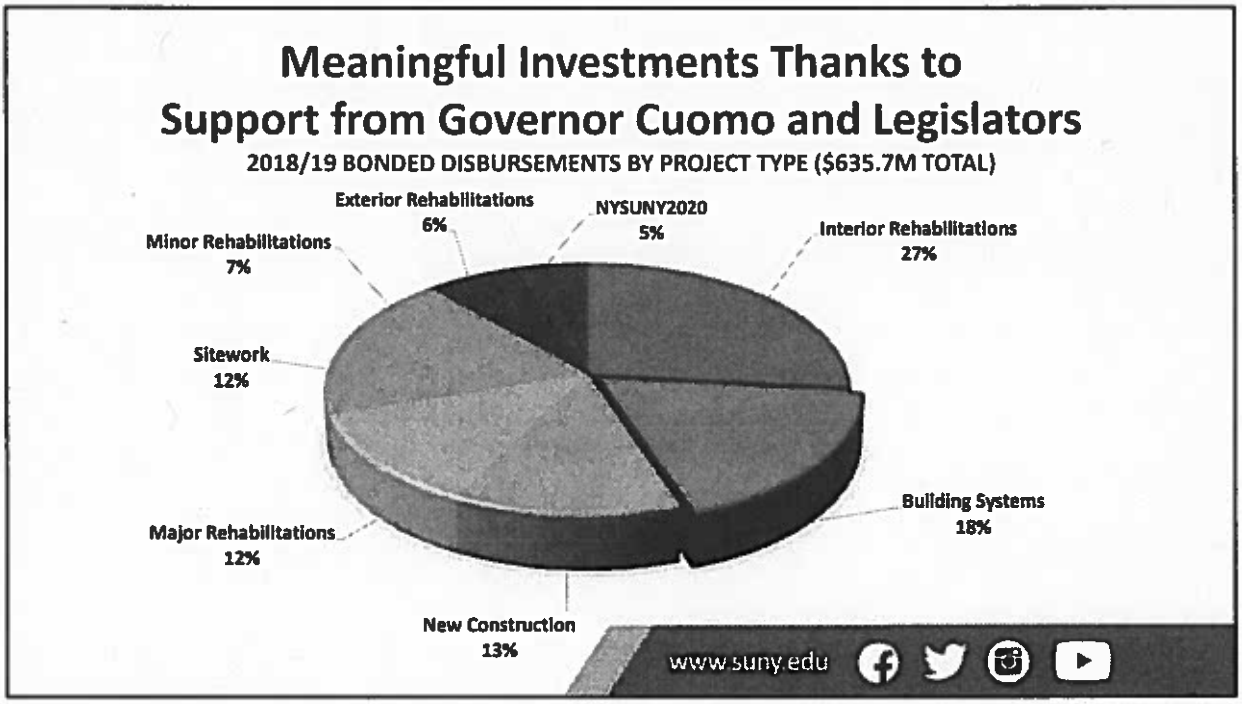

SUNY
Background Material
for the
New York State
Senate Hearing
"Funding Our Public Colleges"
December 16, 2019
www.suny.edu


SUNY
• Overview of NYS Capital Breakdown / Higher Education Allocation
• The SUNY Footprint and Project Life Cycle
• Transformational Investments
• Campus Investments and Impacts
• Climate and Clean Energy Leadership
• Appendices
2


$15 Billion Total Capital Fund, By Area (Spending only)
Education 4%
General Government 3%
Health 5%
All Other 3%
Transportation 39%
Social Welfare 5%
Public Protection 4%
Mental Hygiene 4%
Parks and Environment 9%
Economic Development 14%
Higher Education (Public and Private) 10%
www.suny.edu


Meaningful Investments Thanks to Support from Governor Cuomo and Legislators
2018/19 BONDED DISBURSEMENTS BY PROJECT TYPE ($635.7M TOTAL)
Exterior Rehabilitations 6%
NYSUNY2020 5%
Interior Rehabilitations 27%
Minor Rehabilitations 7%
Sitework 12%
Building Systems 18%
Major Rehabilitations 12%
New Construction 13%
www.suny.edu

The SUNY Footprint

		Number of Buildings	Square Footage (in millions)	Average Age	Funded By	Projects Managed By
STATE OPERATED	Educational Facilities	1,849	62.6	49	State	Fund/Campus
	Hospitals	28	5.2	31	Hospital Revenues	Fund/Campus
	Residence Halls	495	21.4	41	Room Rents	DASNY/ Campus
	Community Colleges	533	21.0	45	50% State 50% Local	Local
	Totals	2,903	110.3	49		

www.suny.edu

Life Cycle Modeling for Capital

Components

- **28** building components
- **25** infrastructure components
- Each has a **replacement cost**
- **42,000** total components

FCI = Facilities Condition Index

Life Cycle Modeling
(Component Based)

$$FCI = \frac{\text{Immediate Renewal}}{\text{Current Cost of Replacement}}$$

Life Cycle Modeling:

- Identify Capital Investment Need
- Facilitates Robust Planning and Targeted Execution
- Predicts future renewal needs

www.suny.edu

Major Elements of Project Planning

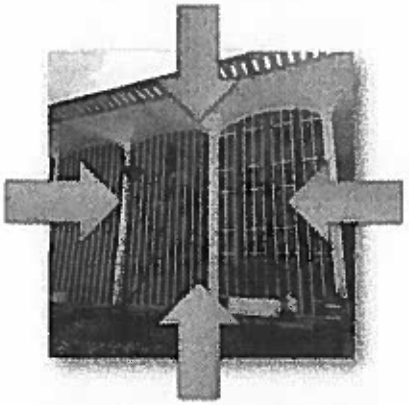
EXAMPLE:
University at Albany
Building 27

This academic space is a recently completed comprehensive renewal and full gut renovation that includes mechanical, electrical, plumbing systems, telecommunications systems, windows, and roofing.

The new space will accommodate the Education and Math Departments.

ENROLLMENT TRENDS

PHYSICAL CONDITION



SUSTAINABILITY OPPORTUNITIES

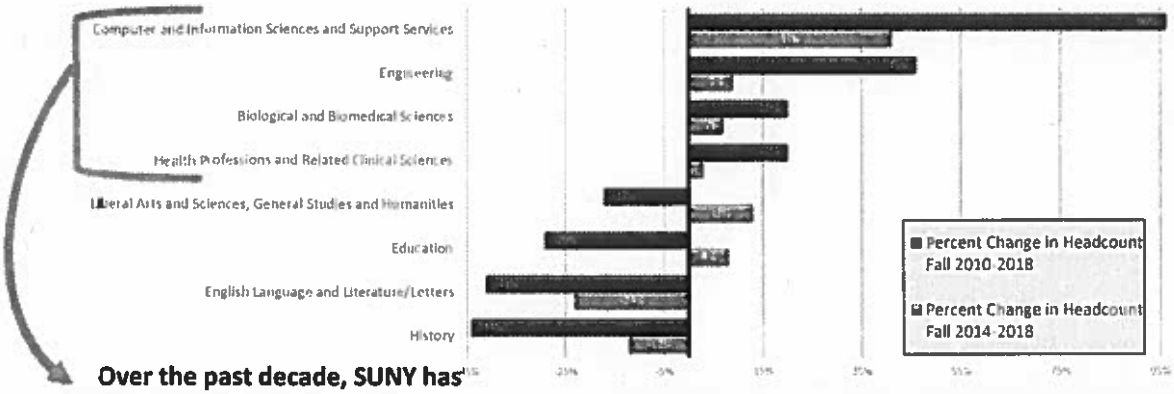
PROGRAMMATIC NEED/DEMAND

Adaptive reuse of an existing building reduces the carbon impact of construction.

Aligning Critical Maintenance Investment with Enrollment Growth and to Prepare SUNY Graduates for 21st Century Professions:

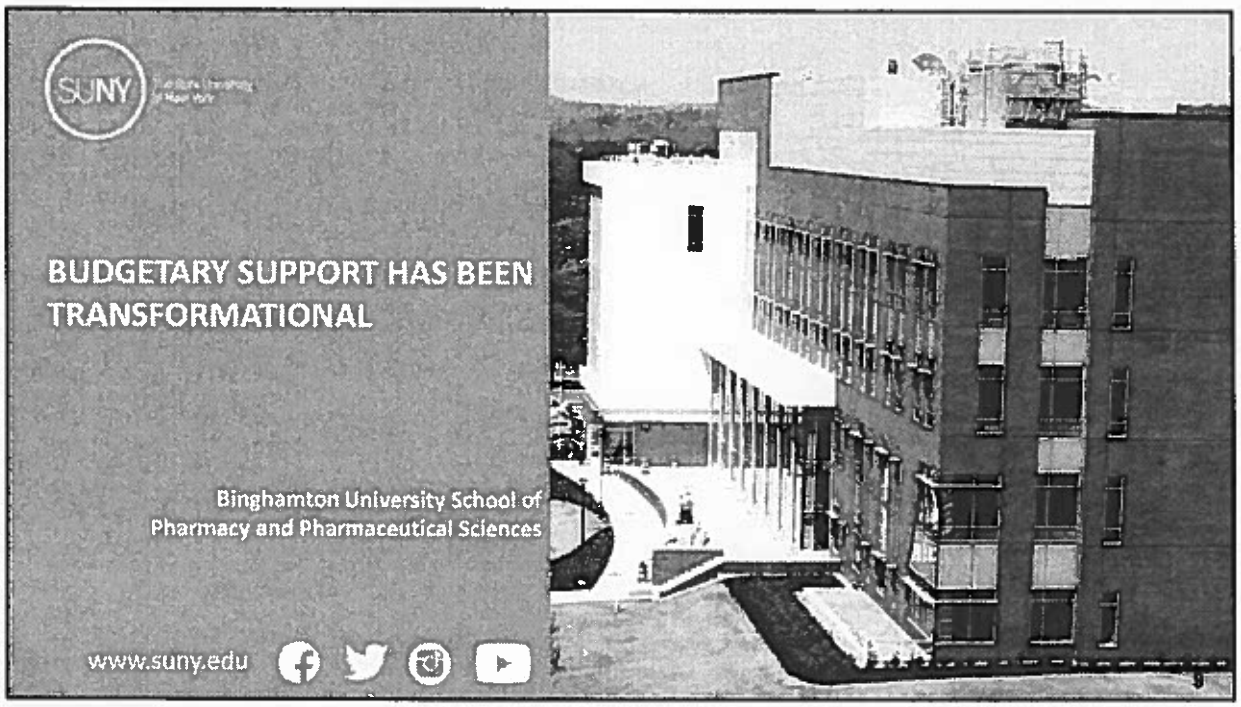
Percent Change in Headcount Enrollment, by Program of Study

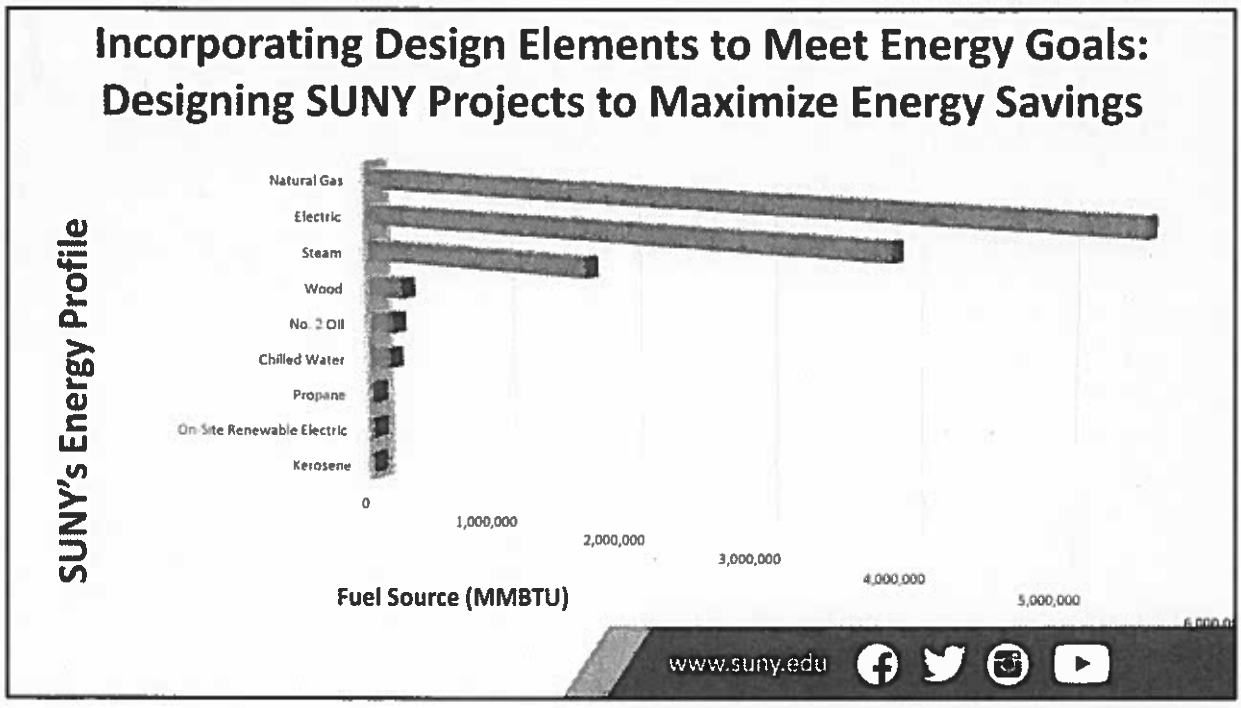
LONG TERM (2010-2018) AND SHORT TERM (2014-2018) TRENDS



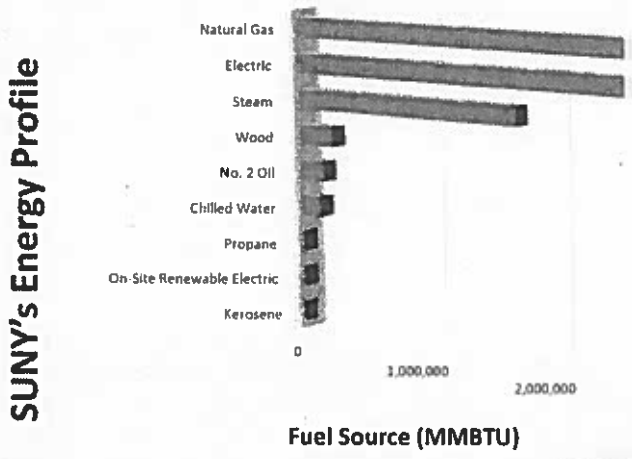
Over the past decade, SUNY has invested more than $3B in facilities that support STEM programs.

8


SUNY
BUDGETARY SUPPORT HAS BEEN TRANSFORMATIONAL
Binghamton University School of Pharmacy and Pharmaceutical Sciences
www.suny.edu


Incorporating Design Elements to Meet Energy Goals:
Designing SUNY Projects to Maximize Energy Savings
SUNY's Energy Profile
Natural Gas
Electric
Steam
Wood
No. 2 Oil
Chilled Water
Propane
On Site Renewable Electric
Kerosene
0
1,000,000
2,000,000
3,000,000
4,000,000
5,000,000
Fuel Source (MMBTU)
www.suny.edu

Incorporating Design Elements to Meet Energy Goals: Designing SUNY Projects to Maximize Energy Savings

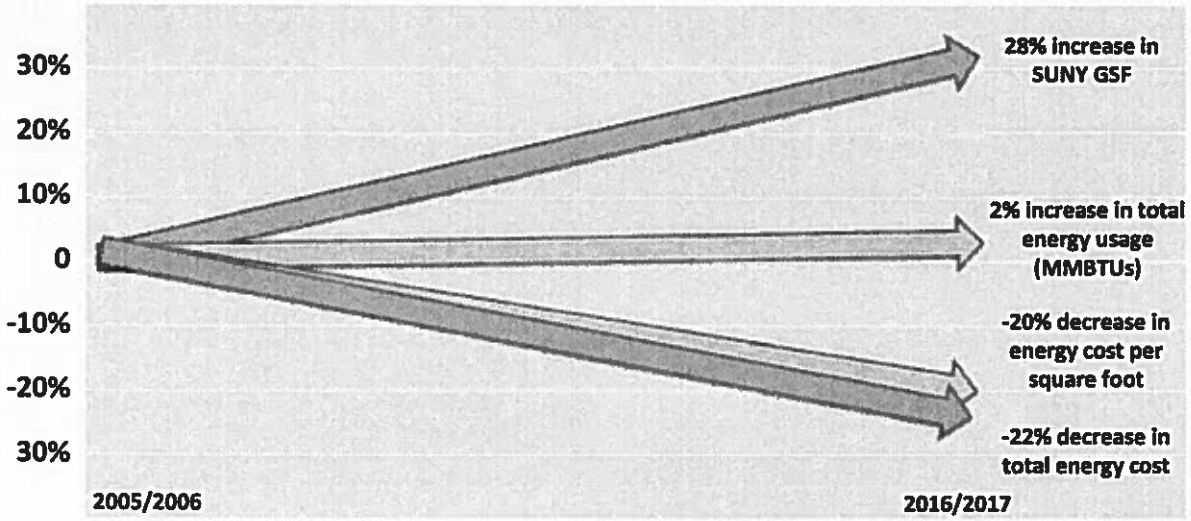


EXAMPLES:

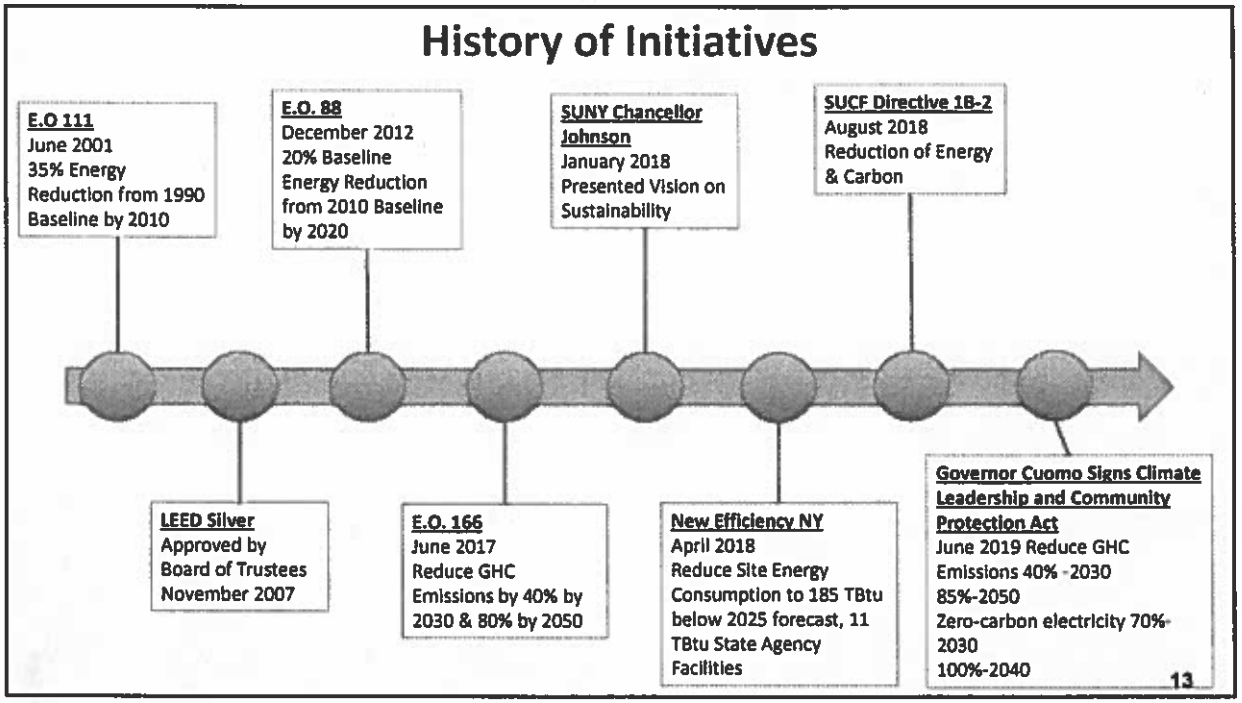
- Insulated Windows and Roofs
- Improved Envelopes
- Geothermal
- High Efficiency Chillers
- Condensing Boilers
- High Performance Fume Hoods
- LED Lighting
- Solar and Photovoltaic

www.suny.edu

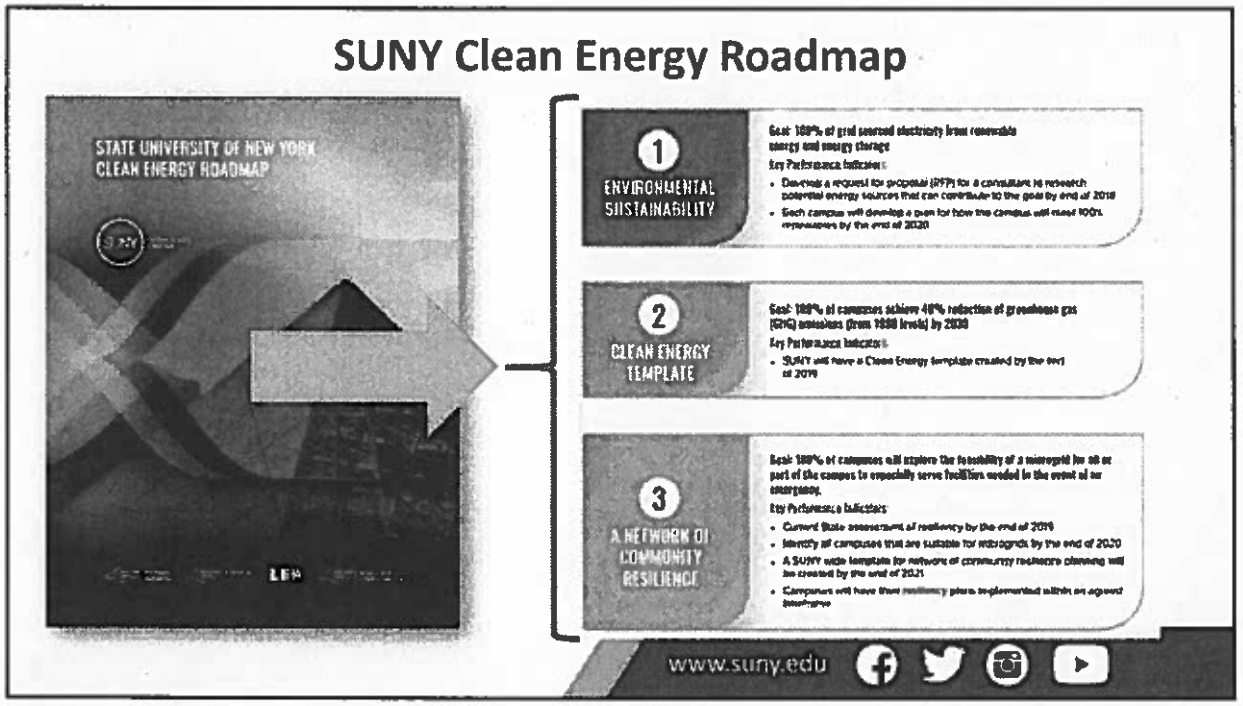
SUNY Leads on Energy Efficiency

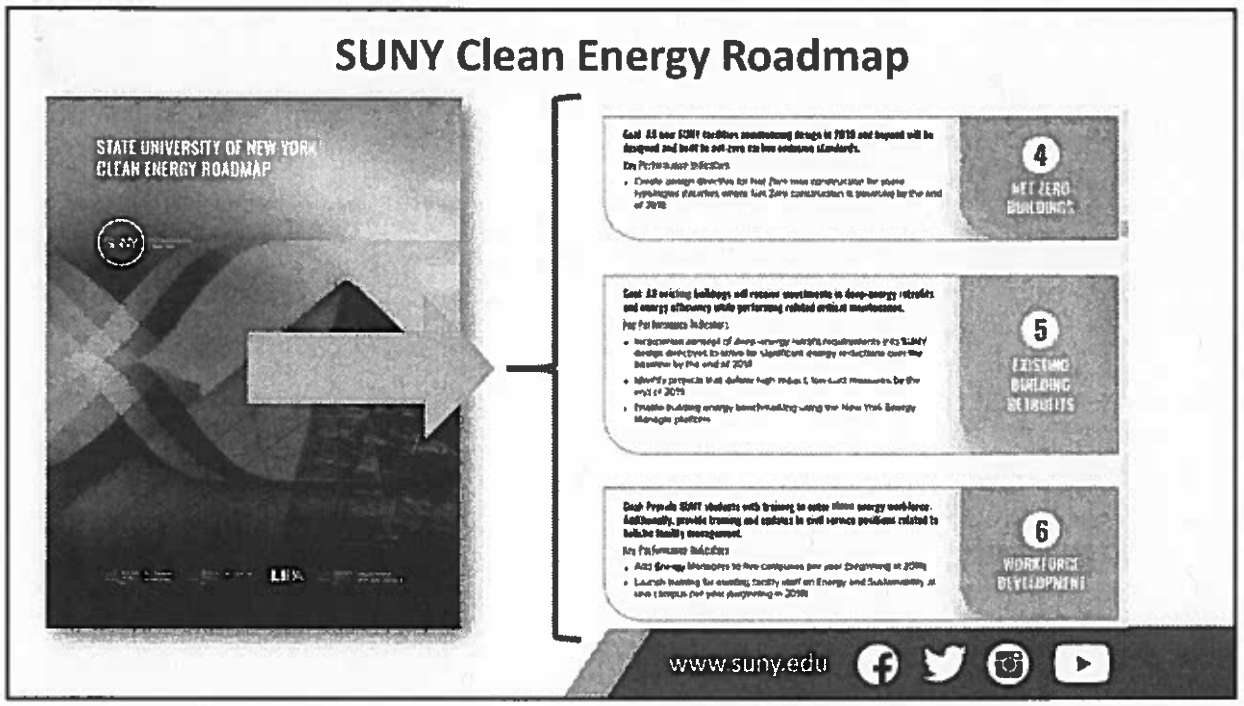


www.suny.edu


History of Initiatives
E.O 111
June 2001
35% Energy Reduction from 1990 Baseline by 2010
E.O. 88
December 2012
20% Baseline Energy Reduction from 2010 Baseline by 2020
SUNY Chancellor Johnson
January 2018
Presented Vision on Sustainability
SUCF Directive 18-2
August 2018
Reduction of Energy & Carbon
LEED Silver
Approved by Board of Trustees November 2007
E.O. 166
June 2017
Reduce GHC Emissions by 40% by 2030 & 80% by 2050
New Efficiency NY
April 2018
Reduce Site Energy Consumption to 185 TBtu below 2025 forecast, 11 TBtu State Agency Facilities
Governor Cuomo Signs Climate Leadership and Community Protection Act
June 2019 Reduce GHC Emissions 40% -2030
85%-2050
Zero-carbon electricity 70%-2030
100%-2040
13


SUSTAINABILITY OPPORTUNITIES
14


SUNY Clean Energy Roadmap
STATE UNIVERSITY OF NEW YORK
CLEAN ENERGY ROADMAP
1
ENVIRONMENTAL SUSTAINABILITY
2
CLEAN ENERGY TEMPLATE
3
A NETWORK OF COMMUNITY RESILIENCE
www.suny.edu


SUNY Clean Energy Roadmap
STATE UNIVERSITY OF NEW YORK
CLEAN ENERGY ROADMAP
4
NET ZERO BUILDINGS
5
EXISTING BUILDING RETROFITS
6
WORKFORCE DEVELOPMENT
www.suny.edu

GOAL 1 Environmental Sustainability

NY HE LSRE Consortium, Executed Letter of Intent

Twenty-one (21) campuses – Sixteen (17) SUNY and Four (5) privates

SUNY State-Operated Campuses

- University at Albany*
- Binghamton University*
- SUNY Cobleskill
- SUNY Cortland*
- SUNY Empire State College
- SUNY ESF
- SUNY Geneseo
- SUNY Delhi
- SUNY Maritime
- SUNY New Paltz
- SUNY Oneonta
- SUNY Fredonia
- Purchase College*
- SUNY Oswego
- System Administration*

SUNY Community Colleges

- Hudson Valley Community College*
- Onondaga Community College

NYS Private Higher Education Institutions

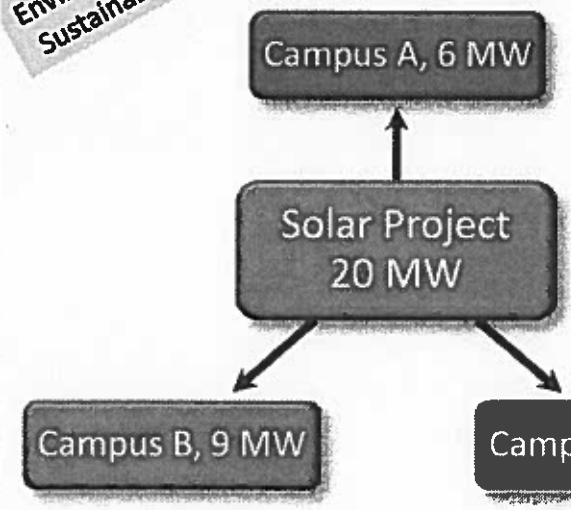
- Bard College
- Cornell University*
- Ithaca College*
- Skidmore College

*Steering Committee member

www.suny.edu

GOAL 1 Environmental Sustainability

NY HE LSRE Overview



- >20 MW solar or
  >40 MW wind, NOT on SUNY campus
- Load from several campuses is aggregated to equal renewable production
- SUNY commitment incentivizes new solar development

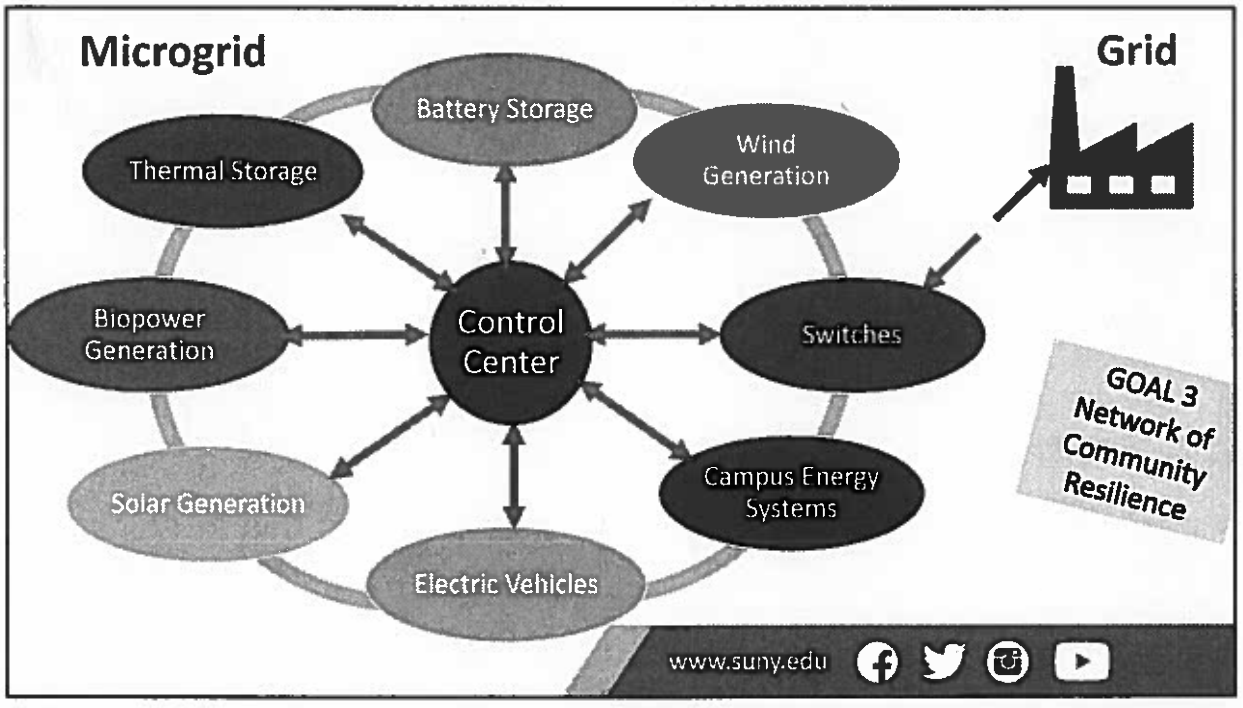
www.suny.edu

GOAL 2 Clean Energy Template

GHS Reduction Efforts

		Million Metric Tonnes (MMT)				Gross SF		
	NY State Goal	US	NYS	SUNY	% reduction	SUNY		% increase
1	1990	5564.0	236.0	1.02		1990	67,059,675	
2	Goal - Reduce 30% by 2020	3894.8	165.2	0.71				
3	2018	5742.6	218.0	0.62	-39.2%	2017	100,330,006	
4	Remaining to meet goal	-1847.80	-52.80	-0.06	0.8%	Increase	33,270,331	50%
	Paris Accord Goal	US	NYS	SUNY	% reduction	SUNY		% increase
5	2005	6122.7	265.0	0.82		2005	80,850,644	
6	Goal - Reduce 28% by 2025	4408.3	185.5	0.57				
7	2018	5742.6	218.0	0.77	-24.4%	2017	100,330,006	
8	Remaining to meet goal	-1334.30	-32.50	-0.20	5.6%	Increase	19,479,362	24%

www.suny.edu

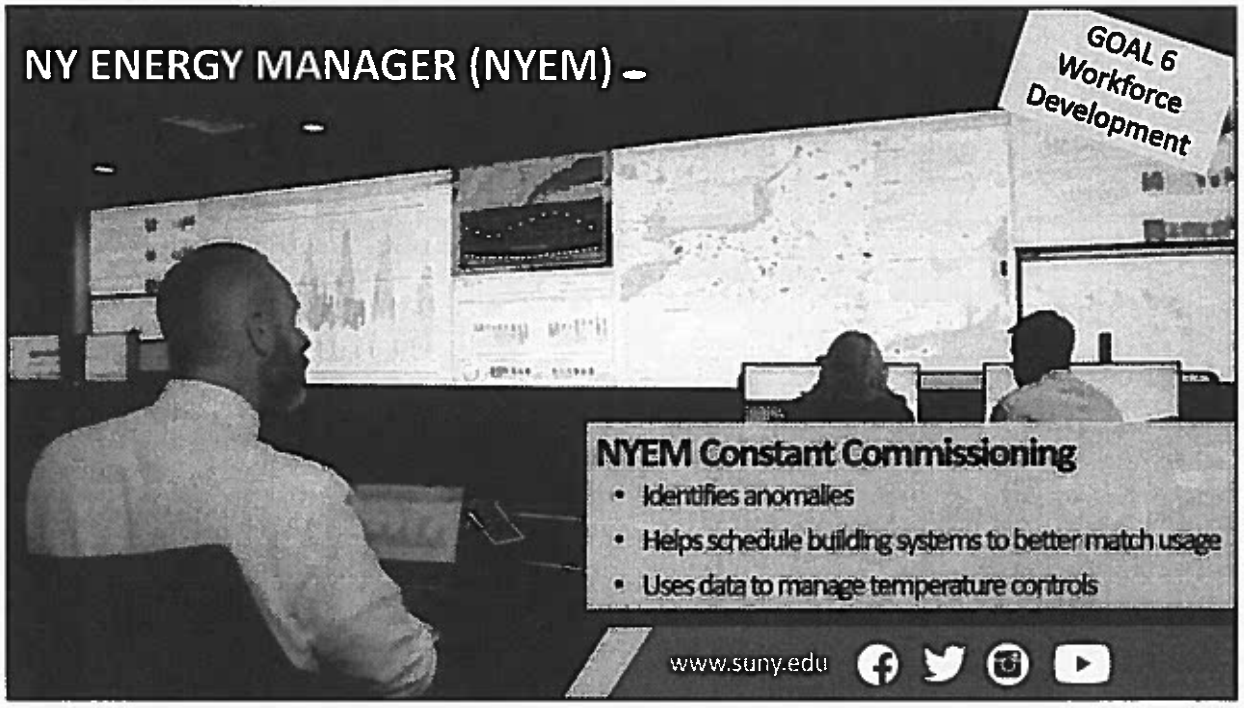


Design Directives

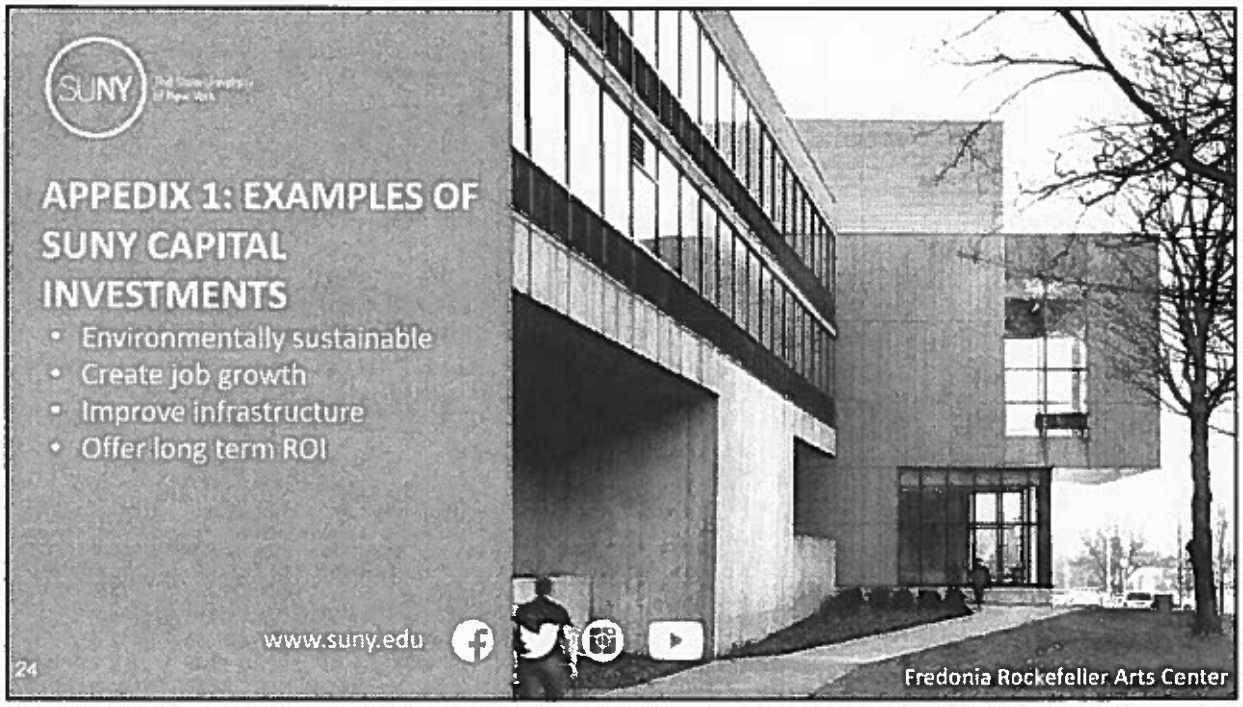
GOAL 4 and 5 Net Zero Buildings and Existing Building Retrofits

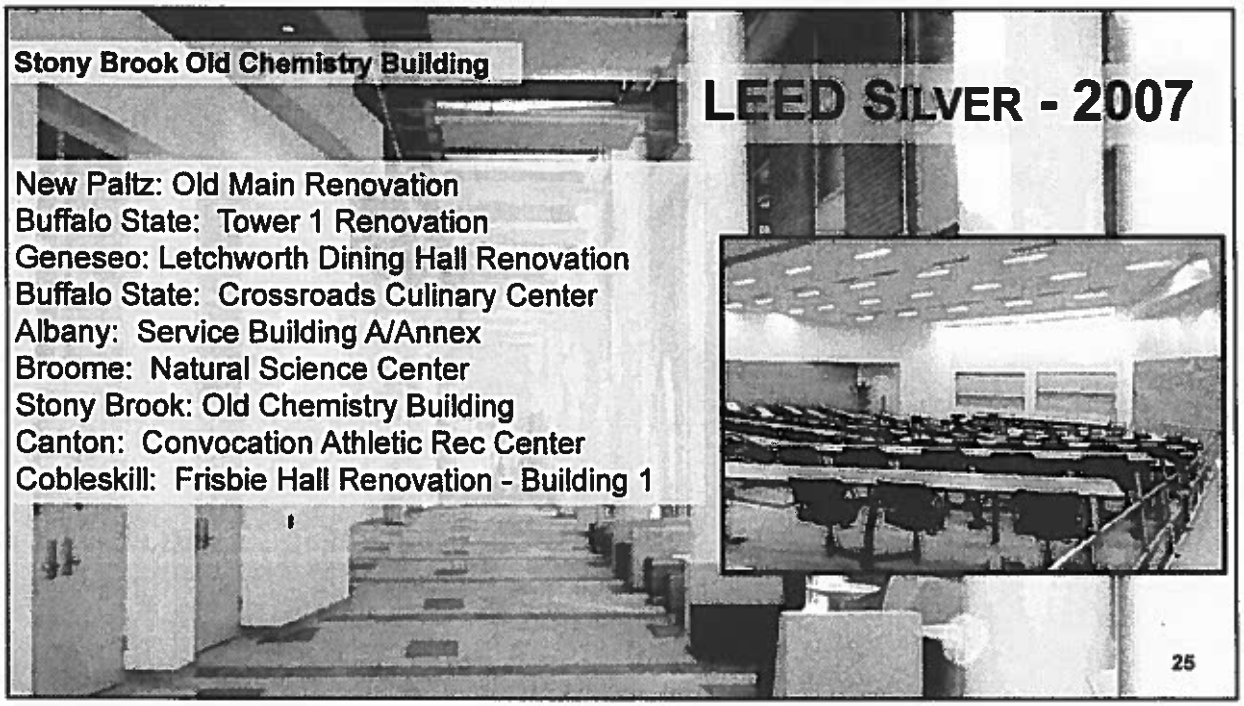
1. **Net Zero Carbon New Buildings**
   Design all new construction building projects to achieve SUNY's goals of NZC buildings. It is recognized that project funding may not be able to include supplying the full energy usage of the building from non-carbon renewable energy sources. In those cases, the design goal will be to design the building as NZC "capable" where the design achieves the energy use intensity (EUI) limit using HVAC equipment and systems that can be electrically powered from renewable energy sources such as ground and air source heat pumps and variable refrigerant flow systems.
2. **Deep Energy Retrofits of Existing Buildings**
   Design existing building projects, which are identified as full building major renovations or gut rehabilitations (single or multi-phased) to achieve SUNY's goal for DER. Some building types i.e. historic buildings may not be suitable for DER due to limitations on the type of work that is possible or appropriate to be performed on these buildings.
3. **Partial Buildings Renovations or System/Component Replacements**
   When the project scope does not include a full building rehabilitation or renovation, evaluation and selection of new equipment and systems should take into consideration their contribution to the overall reduction of project-related and future building energy use.

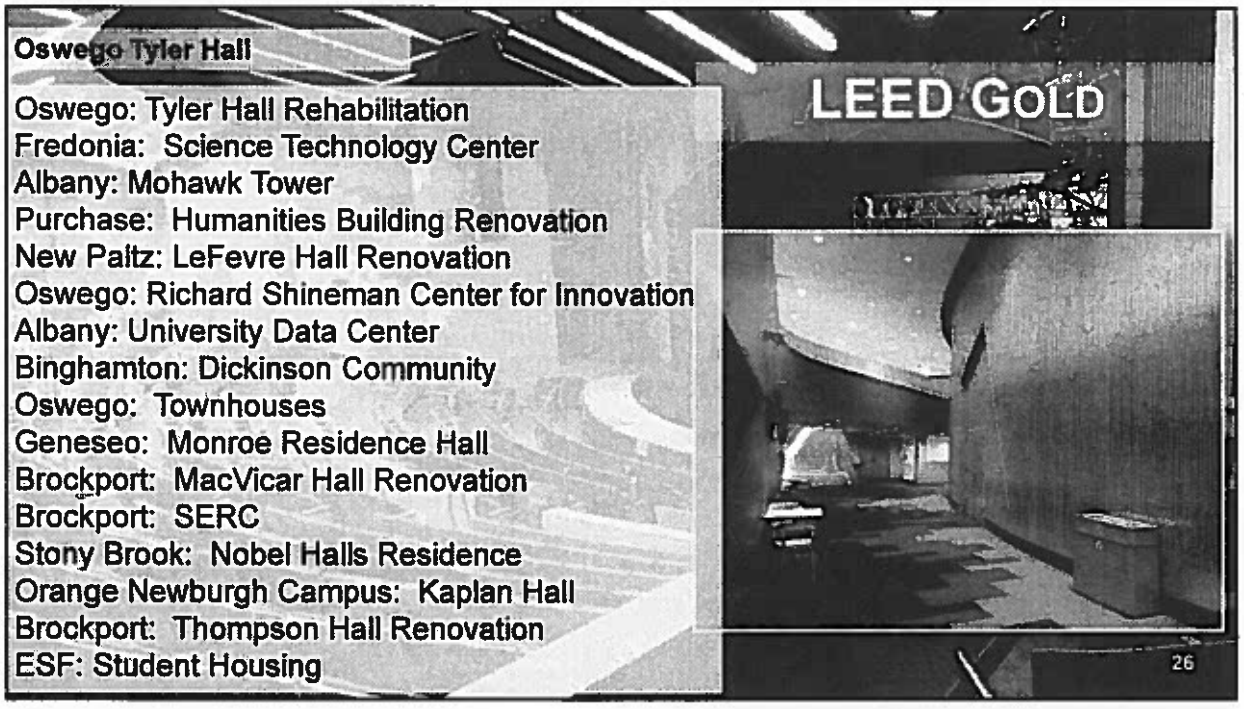
www.suny.edu

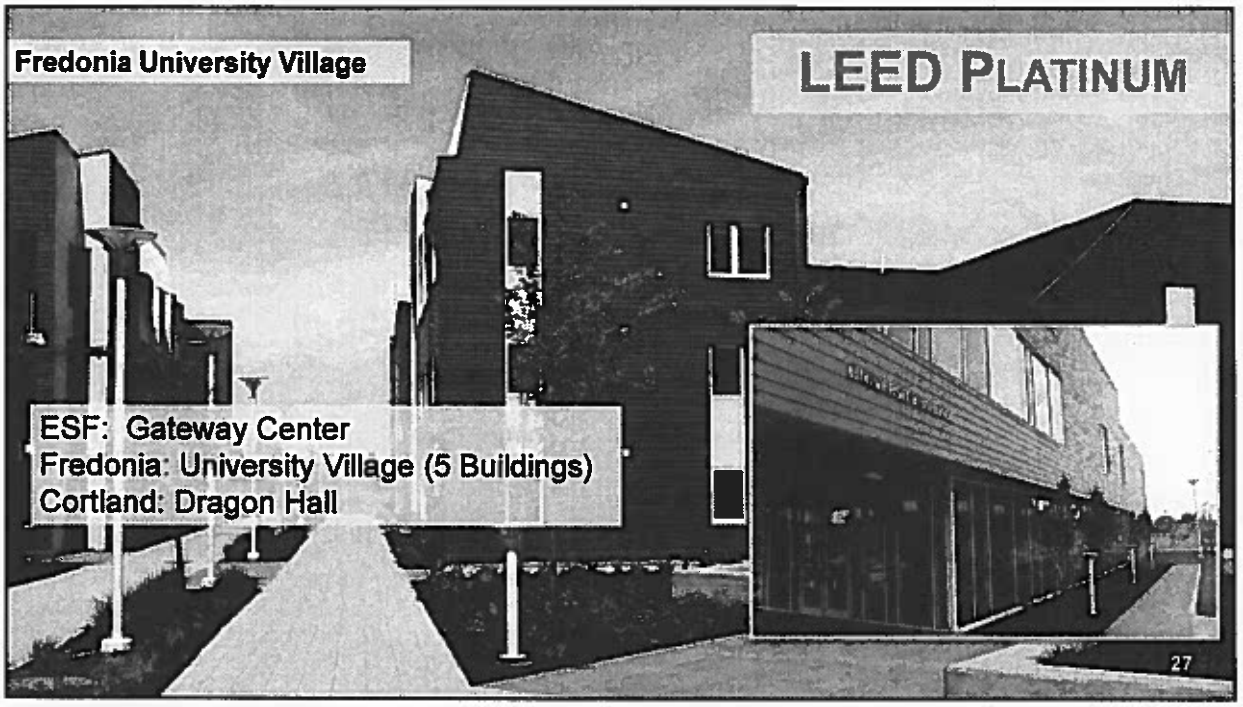


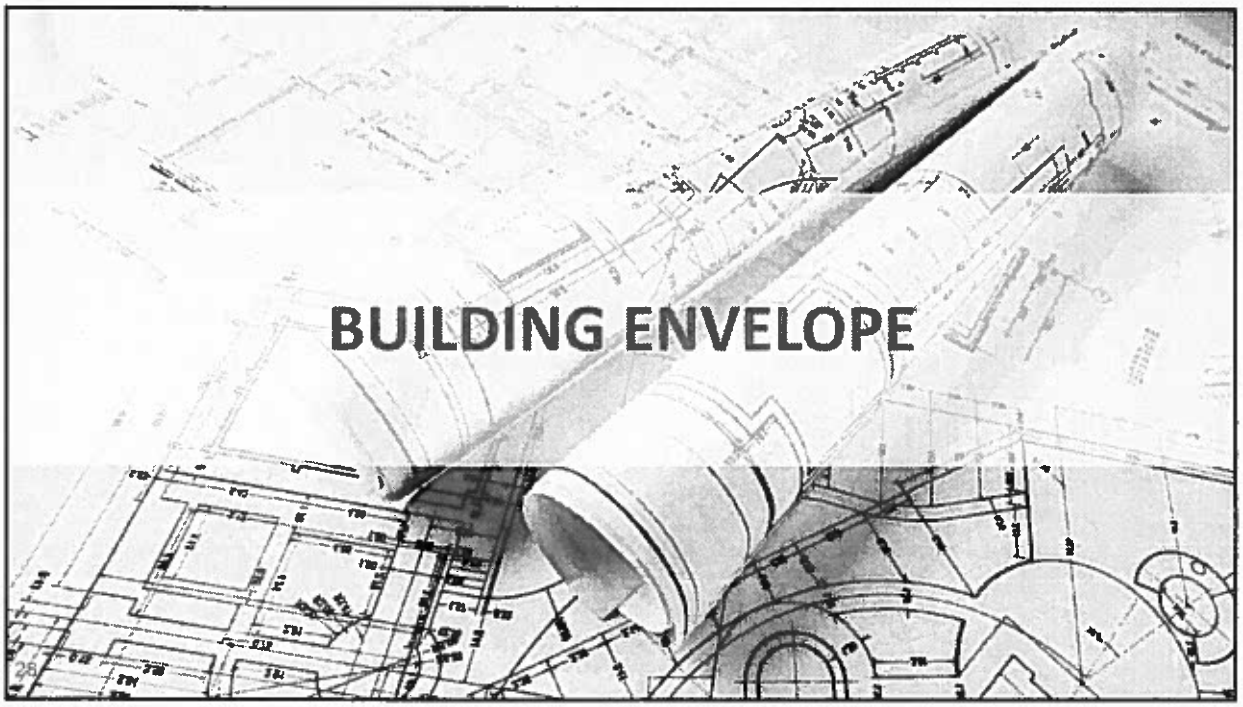

QUESTIONS
Oneonta Milne Library
SUNY
28

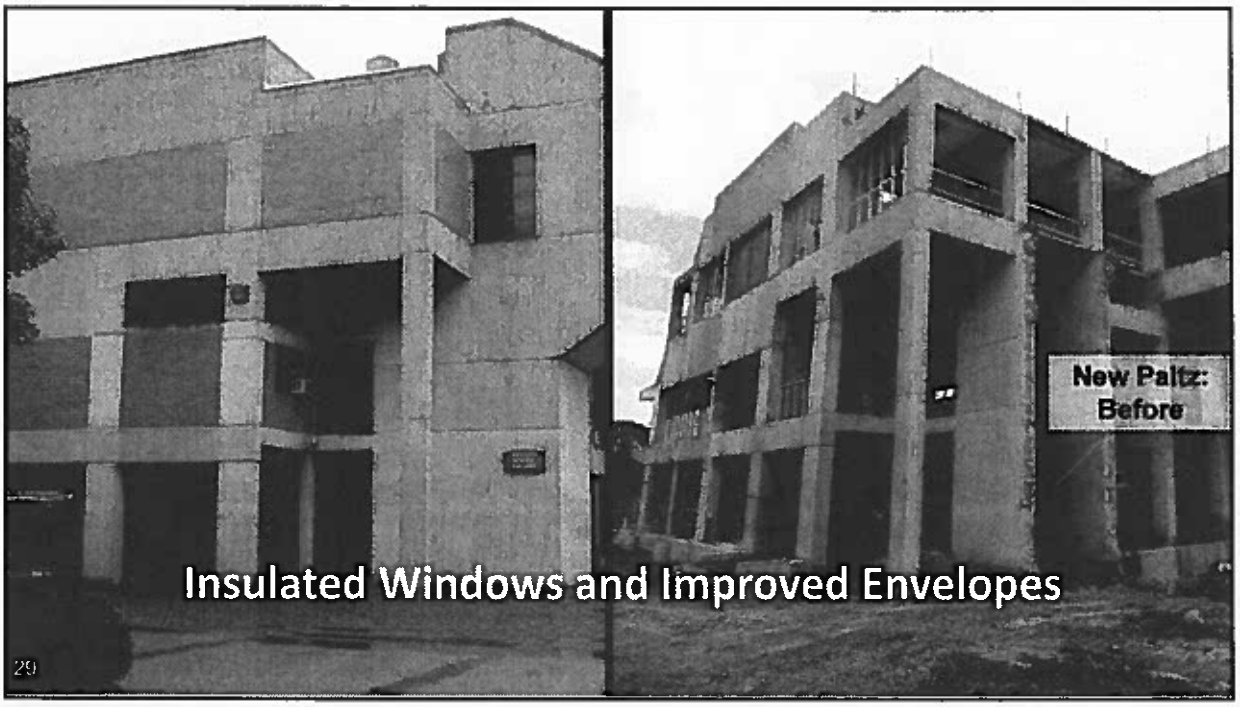

SUNY
APPEDIX 1: EXAMPLES OF SUNY CAPITAL INVESTMENTS
• Environmentally sustainable
• Create job growth
• Improve infrastructure
• Offer long term ROI
www.suny.edu
24
Fredonia Rockefeller Arts Center

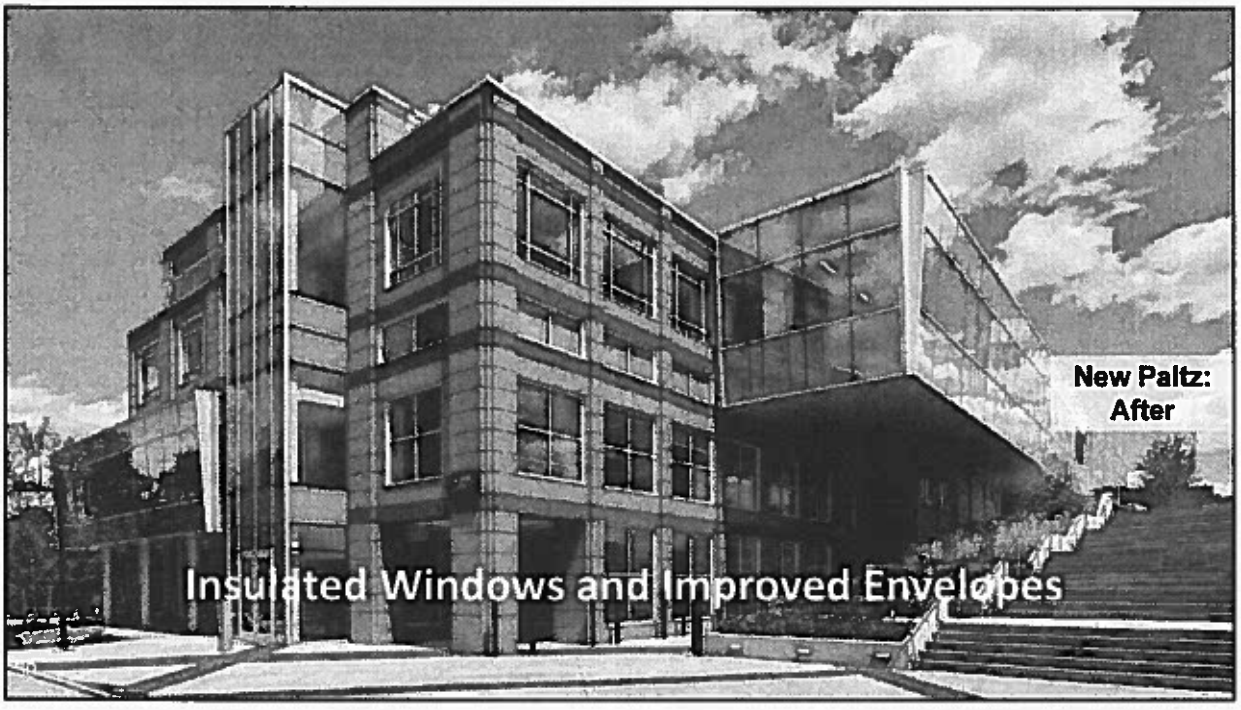

Stony Brook Old Chemistry Building
LEED SILVER - 2007
New Paltz: Old Main Renovation
Buffalo State: Tower 1 Renovation
Geneseo: Letchworth Dining Hall Renovation
Buffalo State: Crossroads Culinary Center
Albany: Service Building A/Annex
Broome: Natural Science Center
Stony Brook: Old Chemistry Building
Canton: Convocation Athletic Rec Center
Cobleskill: Frisbie Hall Renovation - Building 1
25

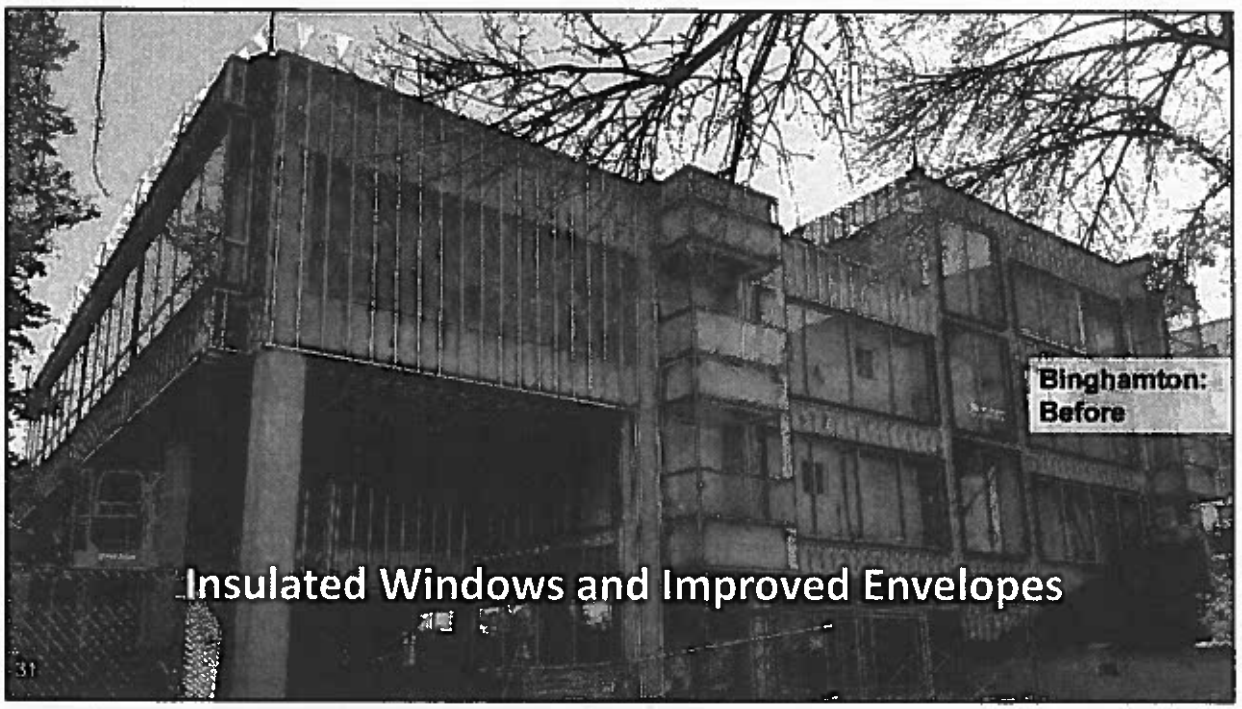

Oswego Tyler Hall
LEED GOLD
Oswego: Tyler Hall Rehabilitation
Fredonia: Science Technology Center
Albany: Mohawk Tower
Purchase: Humanities Building Renovation
New Paltz: LeFevre Hall Renovation
Oswego: Richard Shineman Center for Innovation
Albany: University Data Center
Binghamton: Dickinson Community
Oswego: Townhouses
Geneseo: Monroe Residence Hall
Brockport: MacVicar Hall Renovation
Brockport: SERC
Stony Brook: Nobel Halls Residence
Orange Newburgh Campus: Kaplan Hall
Brockport: Thompson Hall Renovation
ESF: Student Housing
26

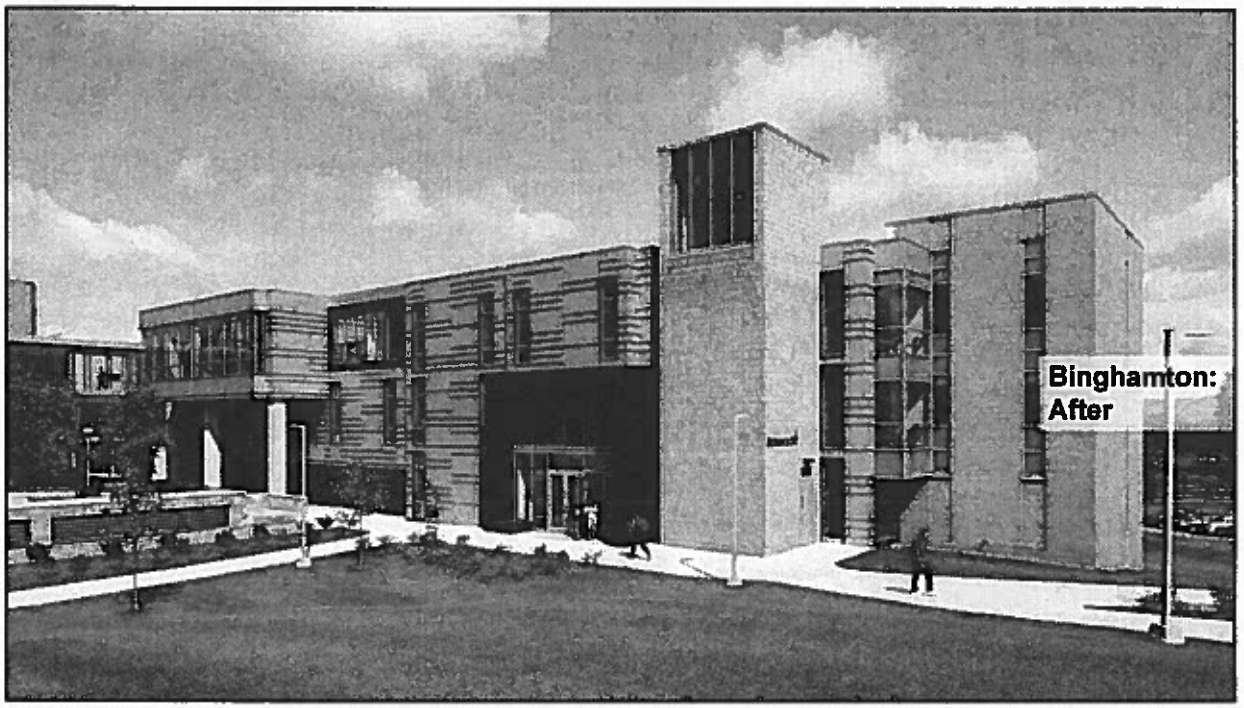

Fredonia University Village
LEED PLATINUM
ESF: Gateway Center
Fredonia: University Village (5 Buildings)
Cortland: Dragon Hall
27

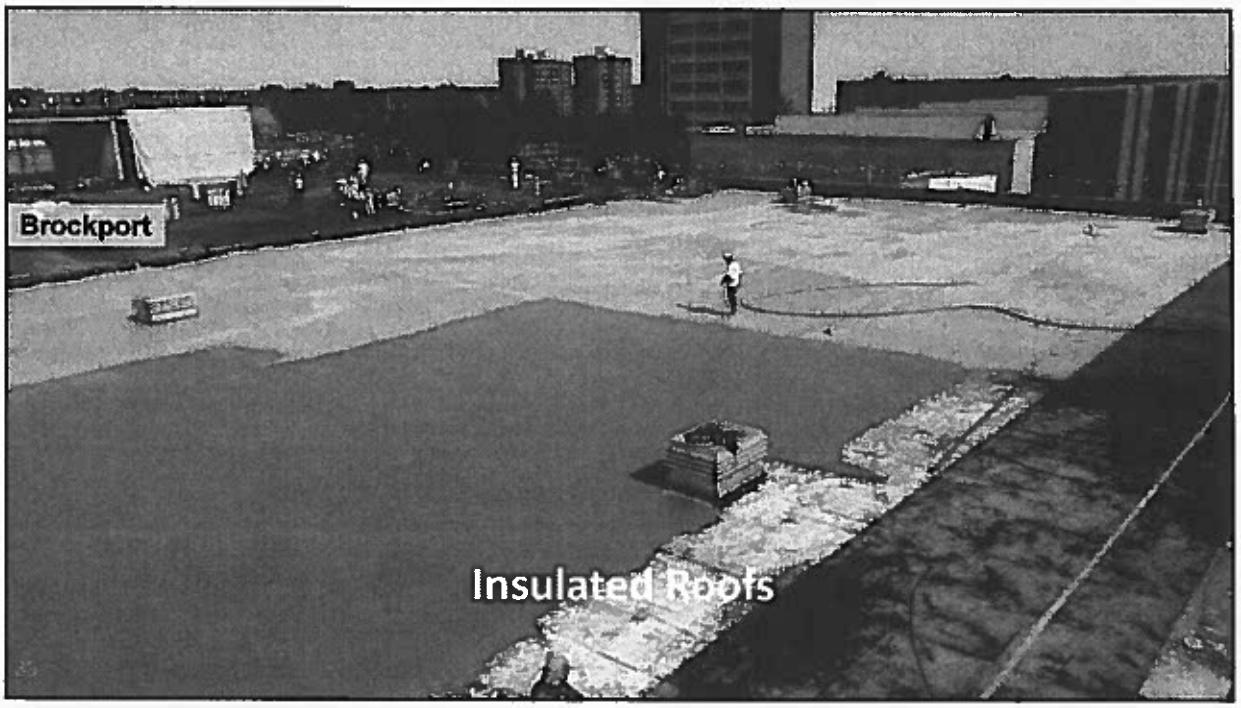

BUILDING ENVELOPE

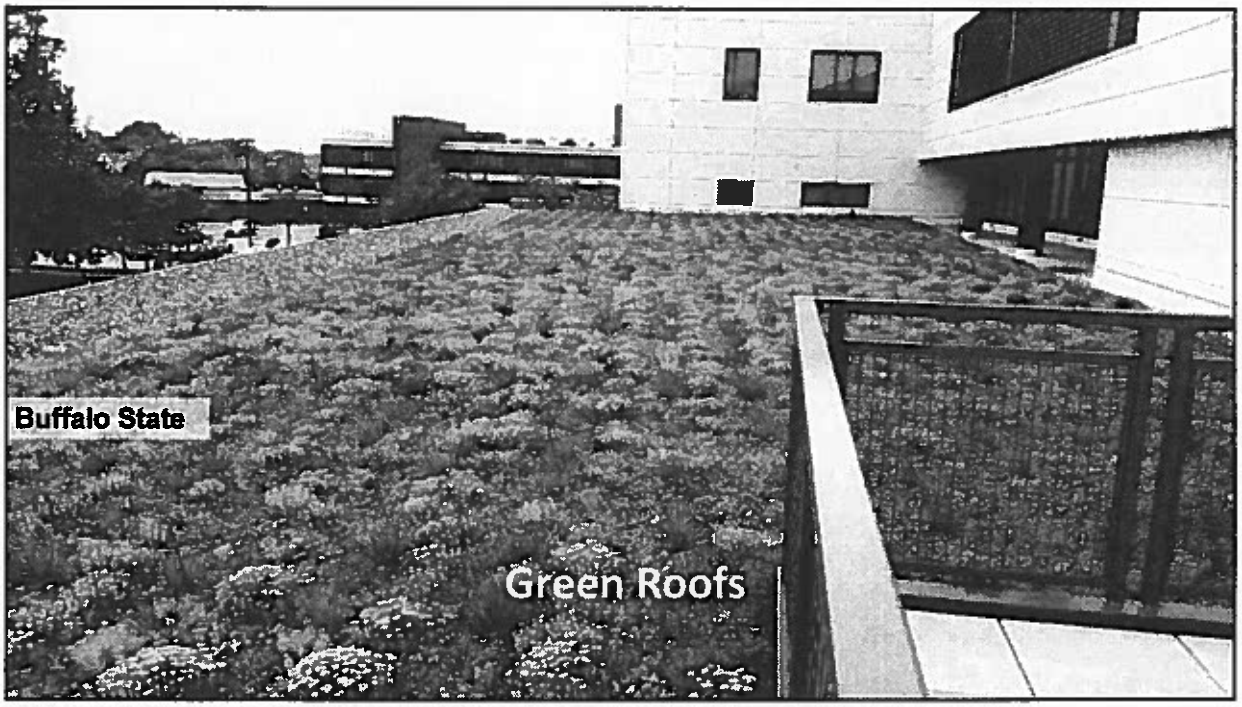

New Paltz:
Before
Insulated Windows and Improved Envelopes
29


New Paltz:
After
Insulated Windows and Improved Envelopes

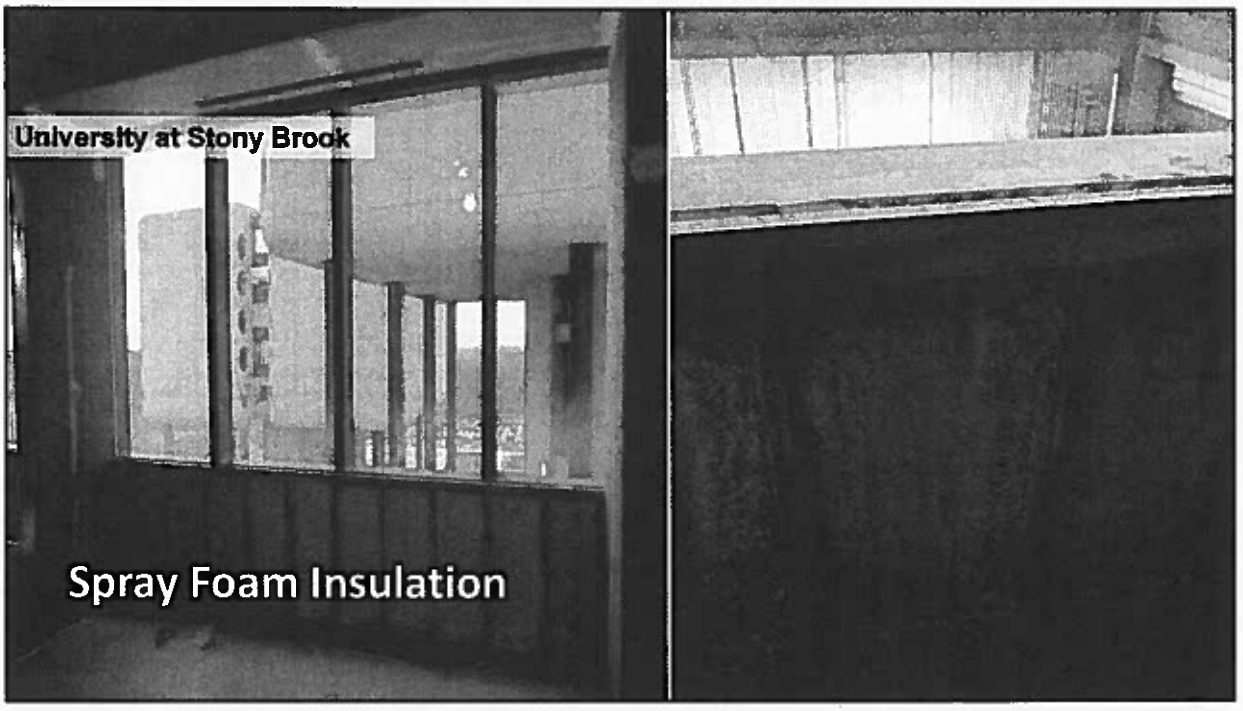

Binghamton:
Before
Insulated Windows and Improved Envelopes
31

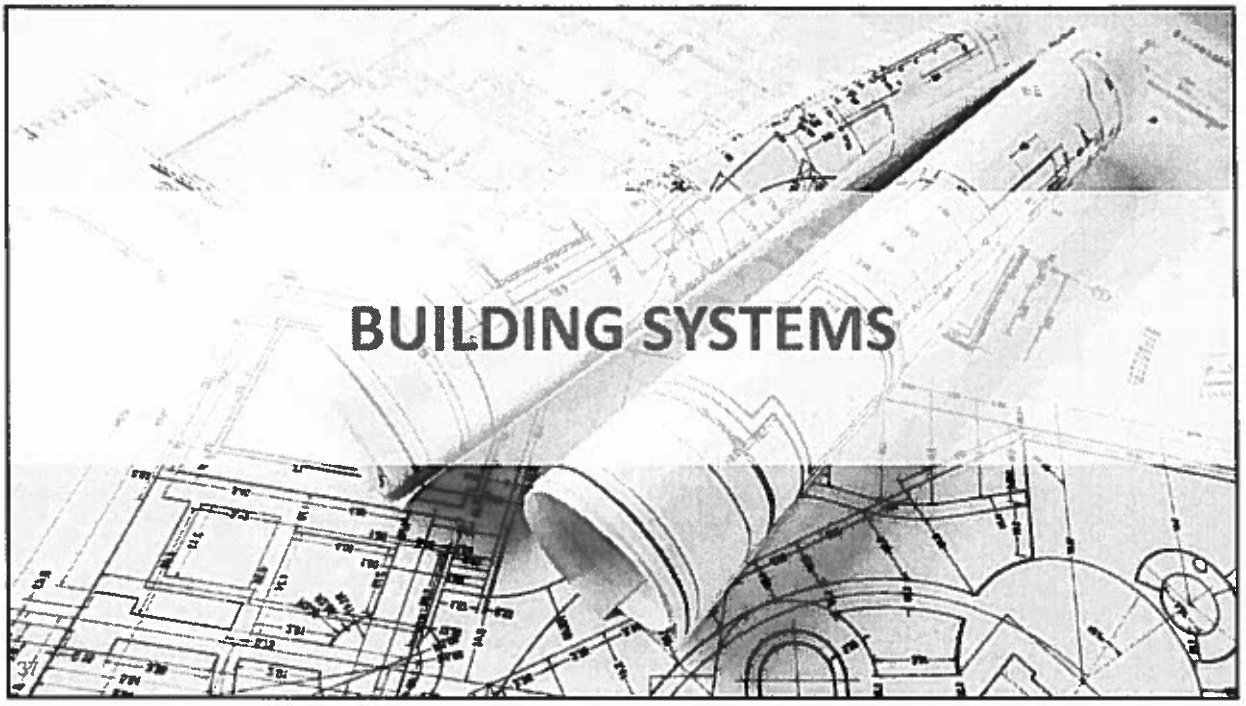

Binghamton:
After

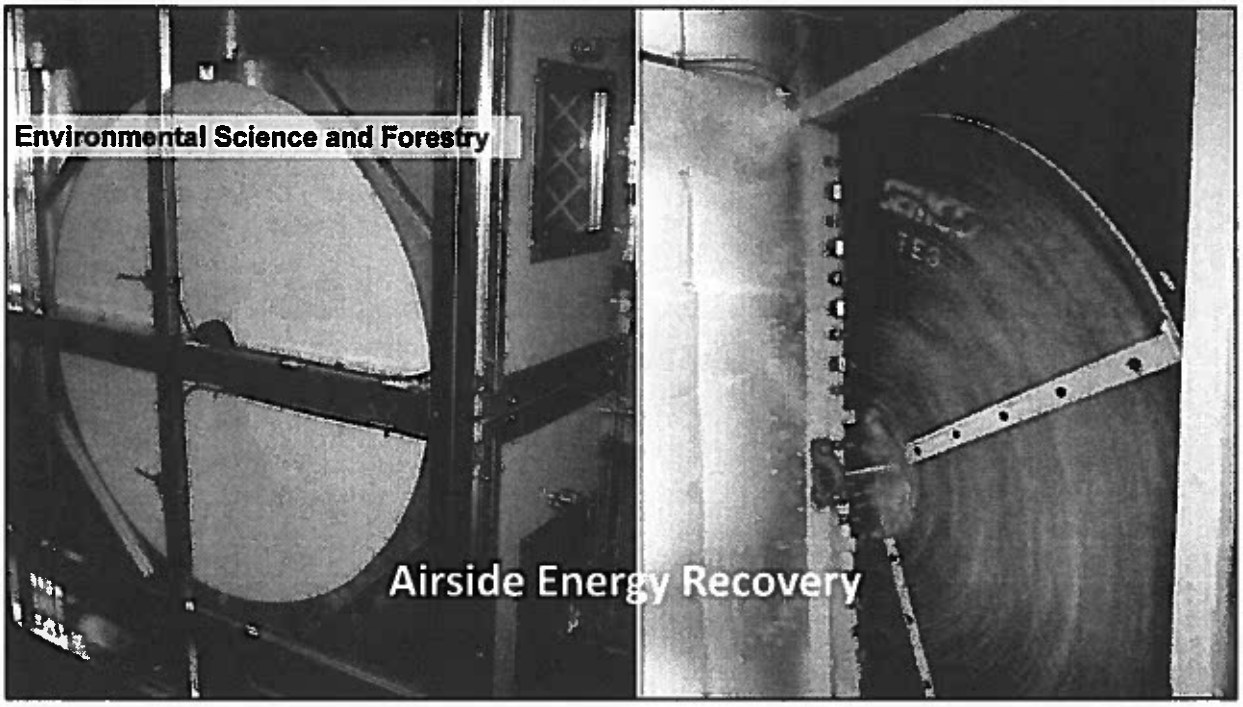

Brockport
Insulated Roofs


Buffalo State
Green Roofs


Brockport
New Paltz
Solar Shades & Fritted Glass

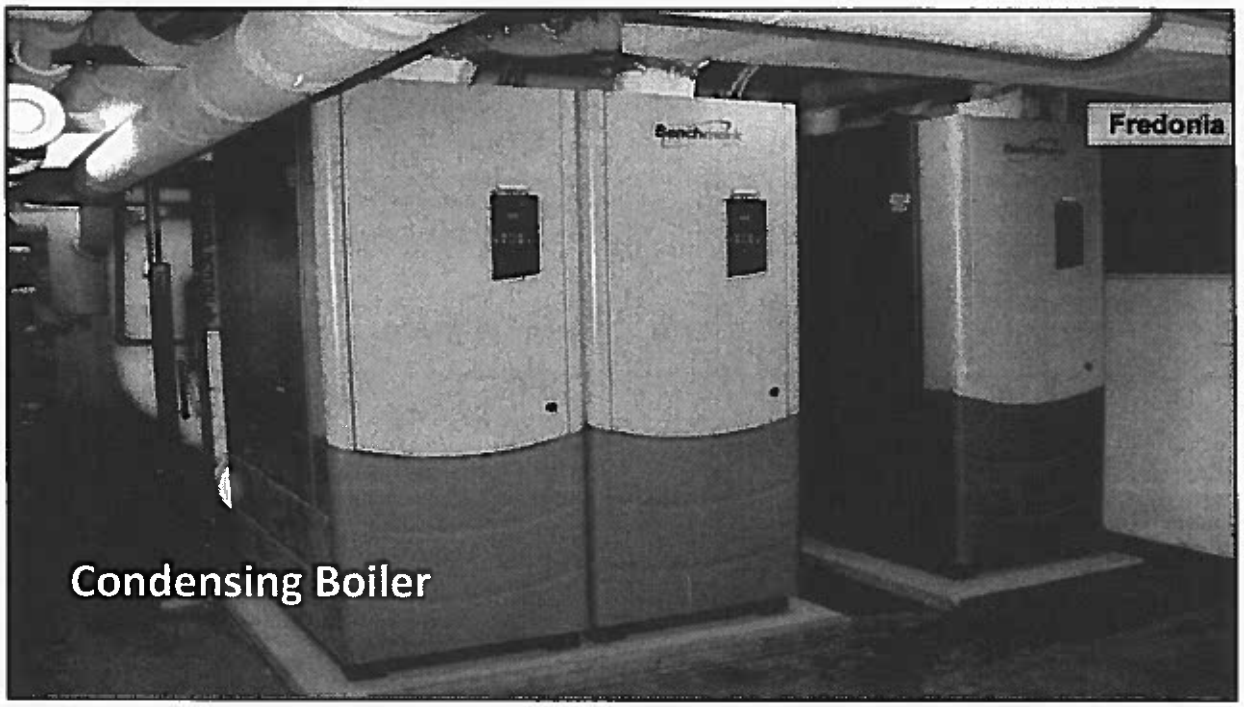

University at Stony Brook
Spray Foam Insulation

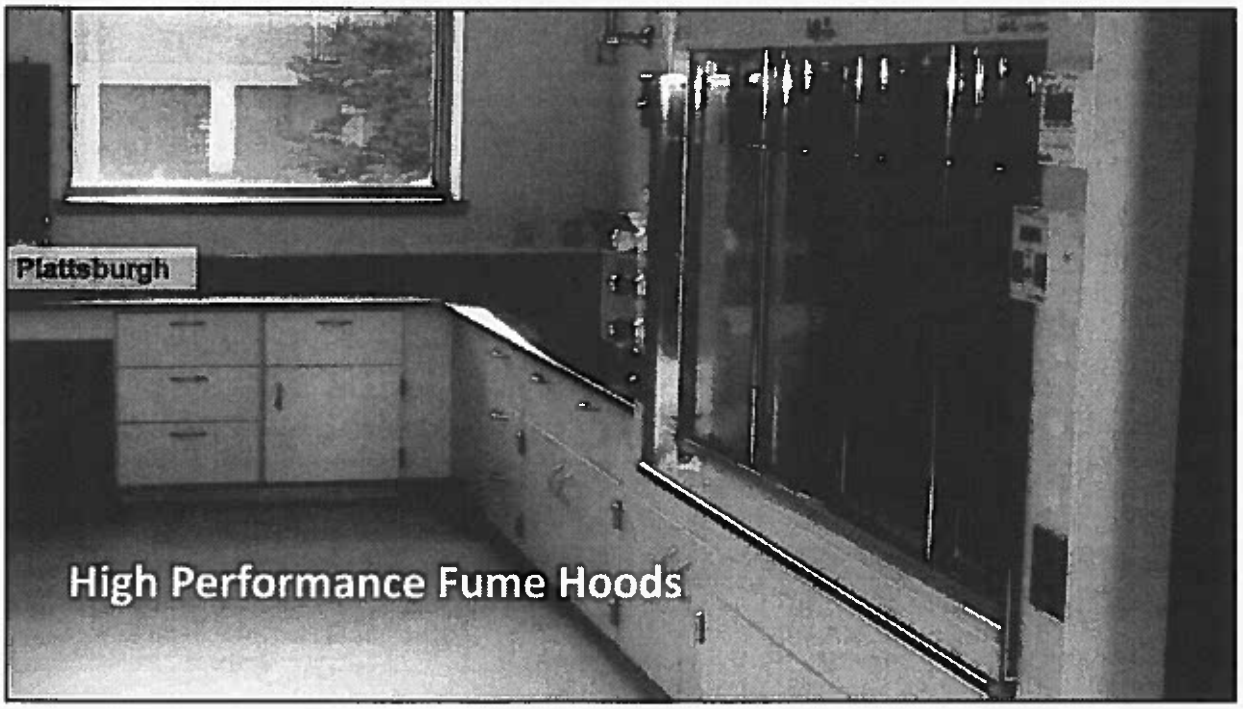

BUILDING SYSTEMS


Environmental Science and Forestry
Airside Energy Recovery


University at Stony Brook
SMARDT
SMARDT
High Efficiency Chillers

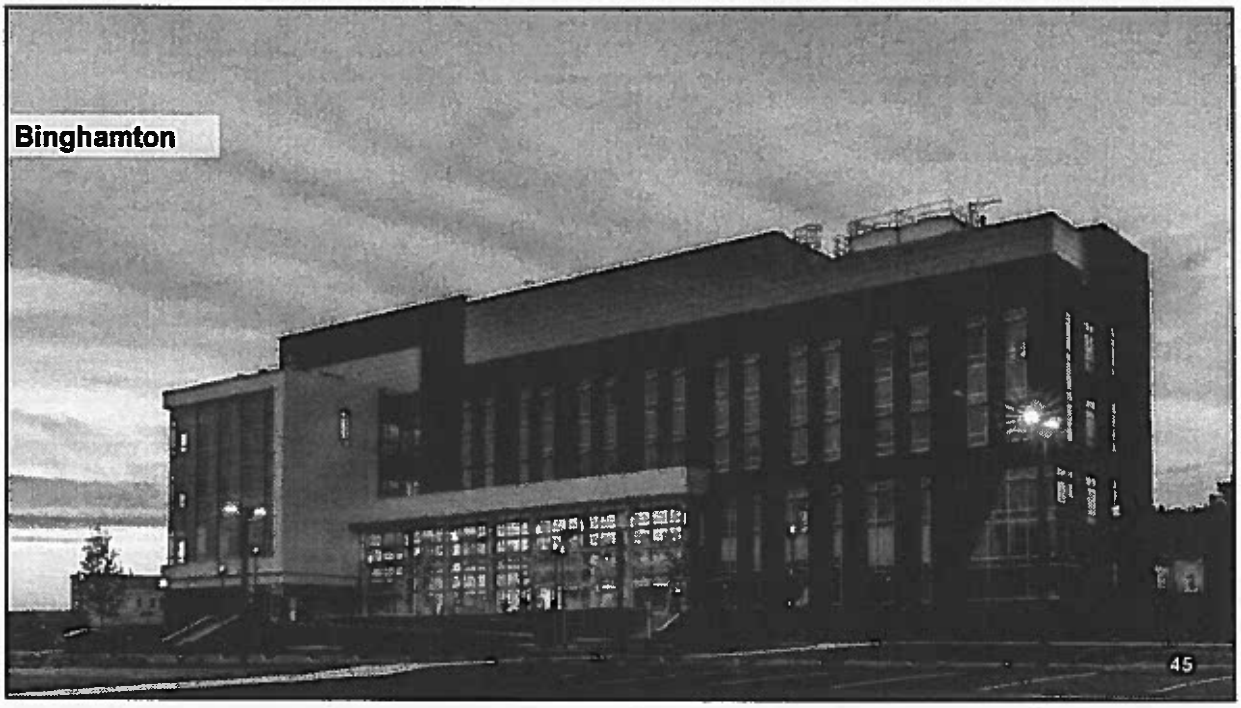

Geneseo
Geothermal

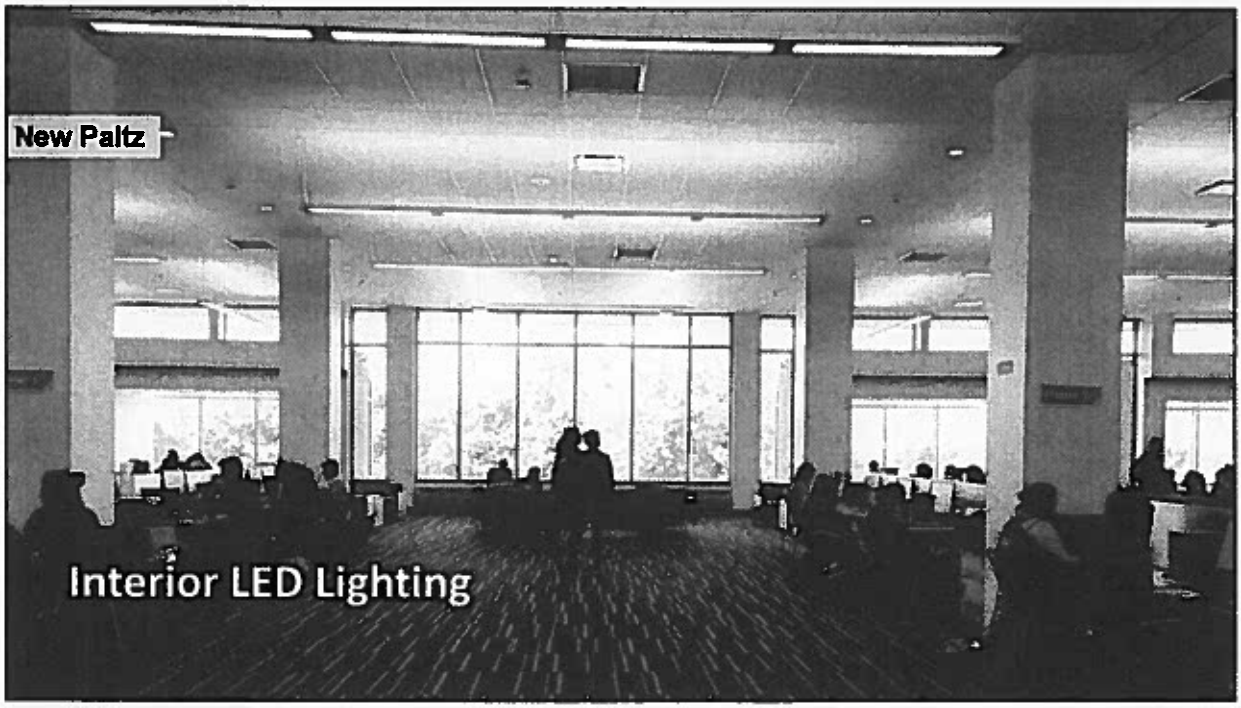

Fredonia
Condensing Boiler


Plattsburgh
High Performance Fume Hoods

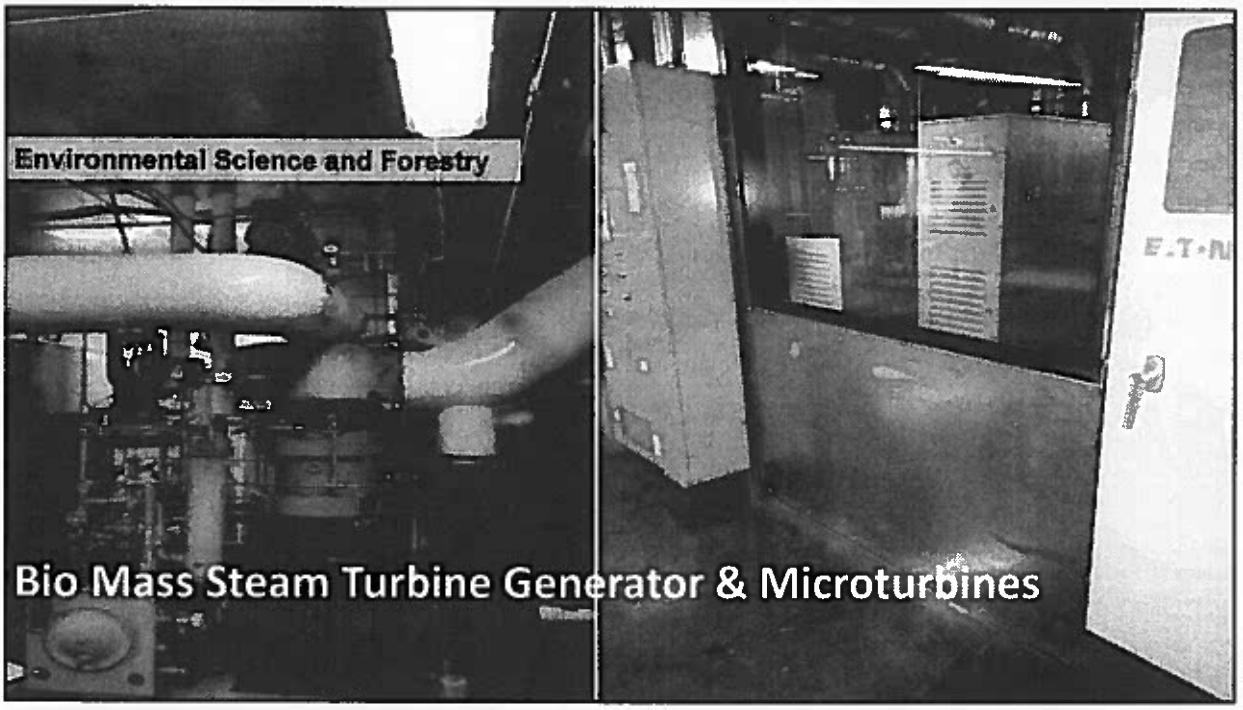

New Paltz
Rainwater Harvesting

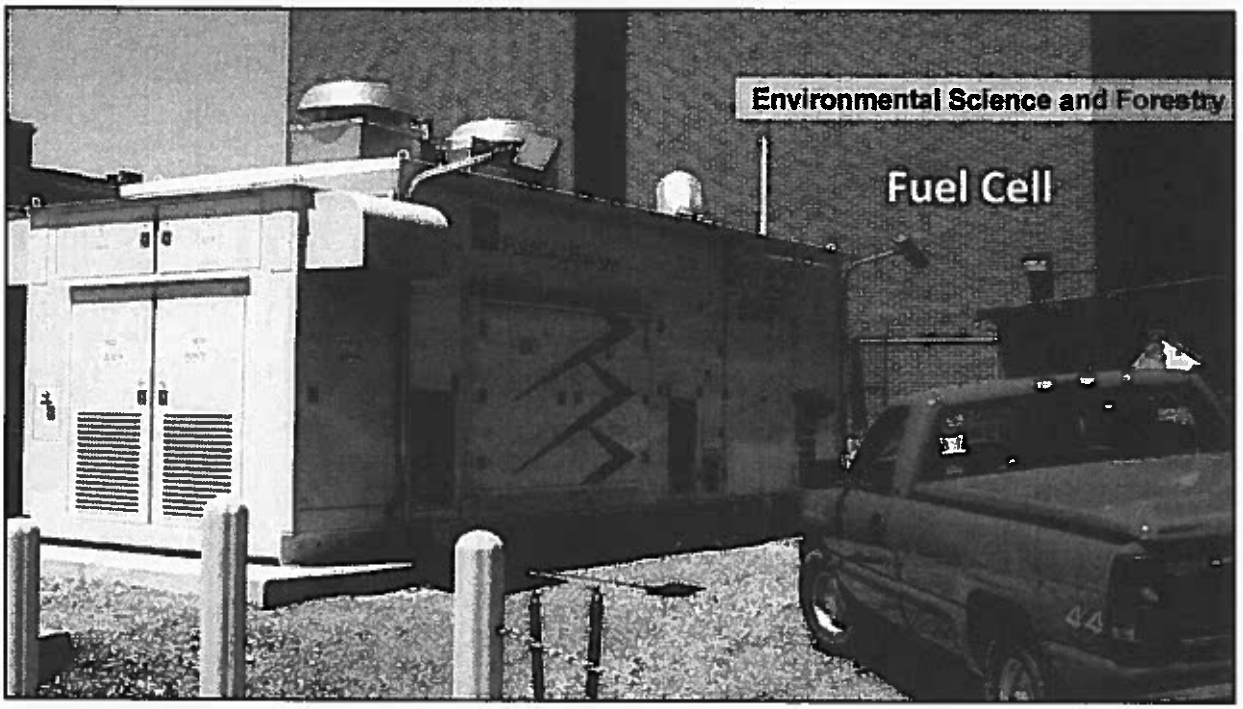

Binghamton
C&D Waste Diversion

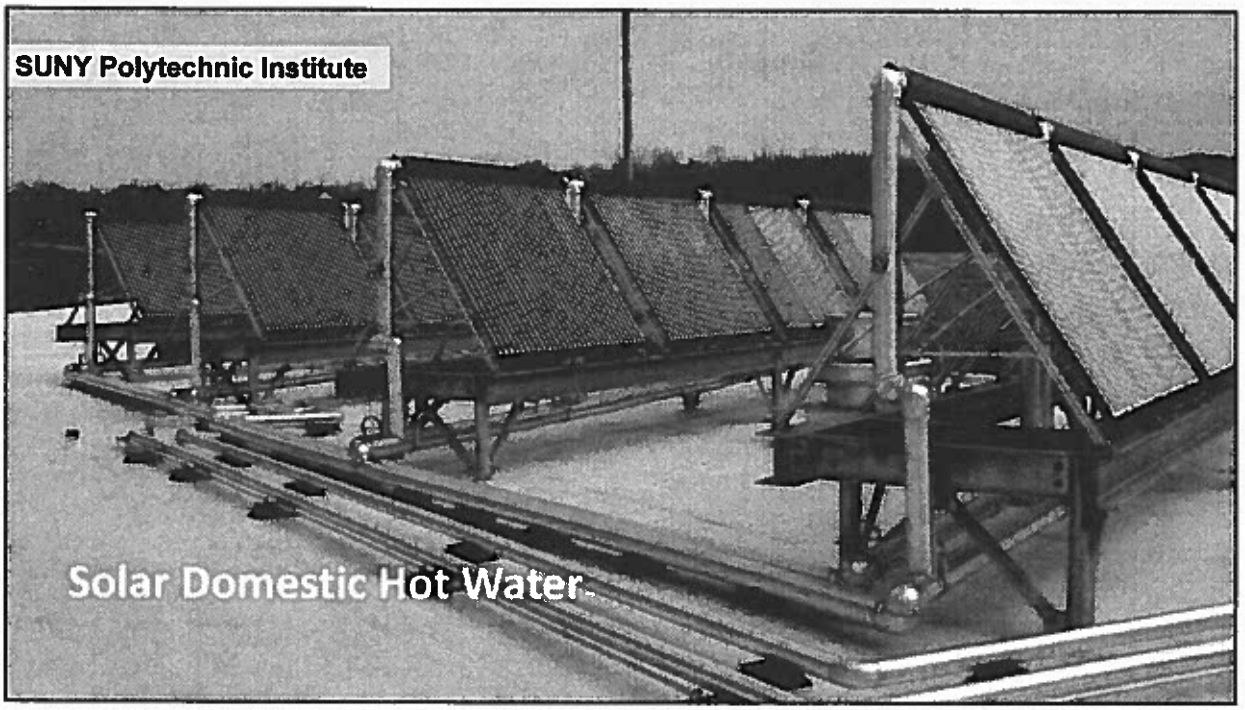

Binghamton
45

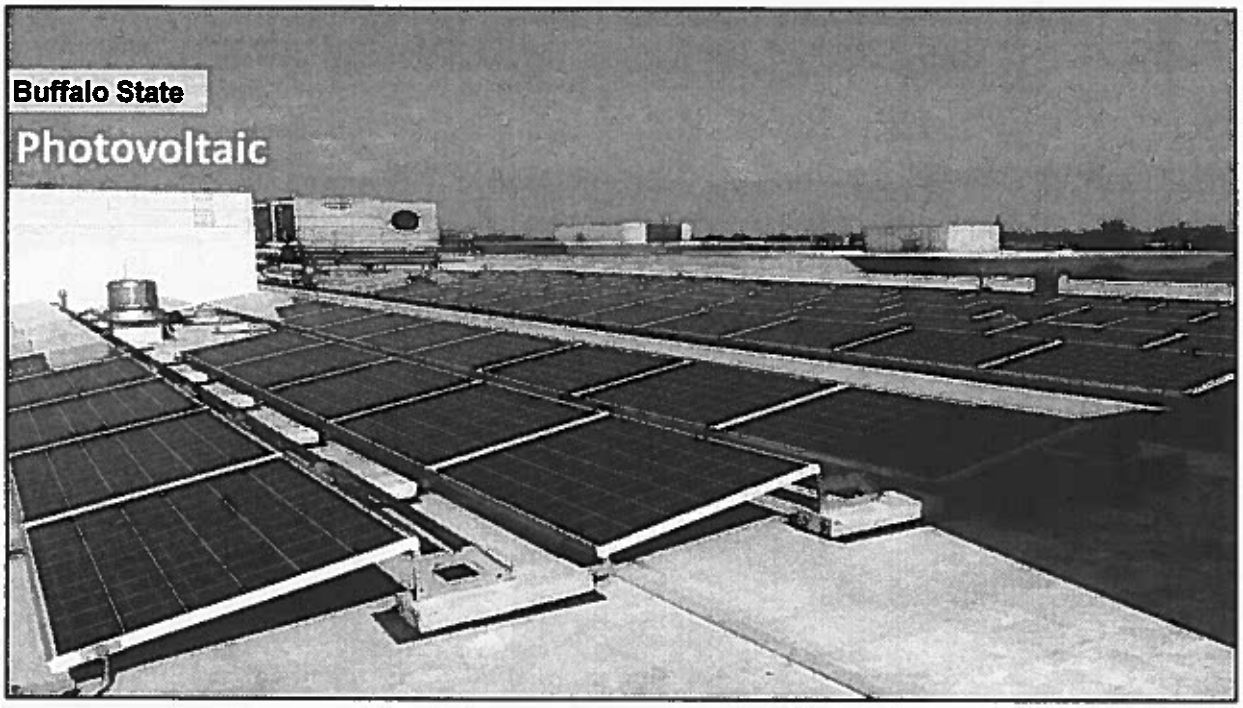

New Paltz
Interior LED Lighting

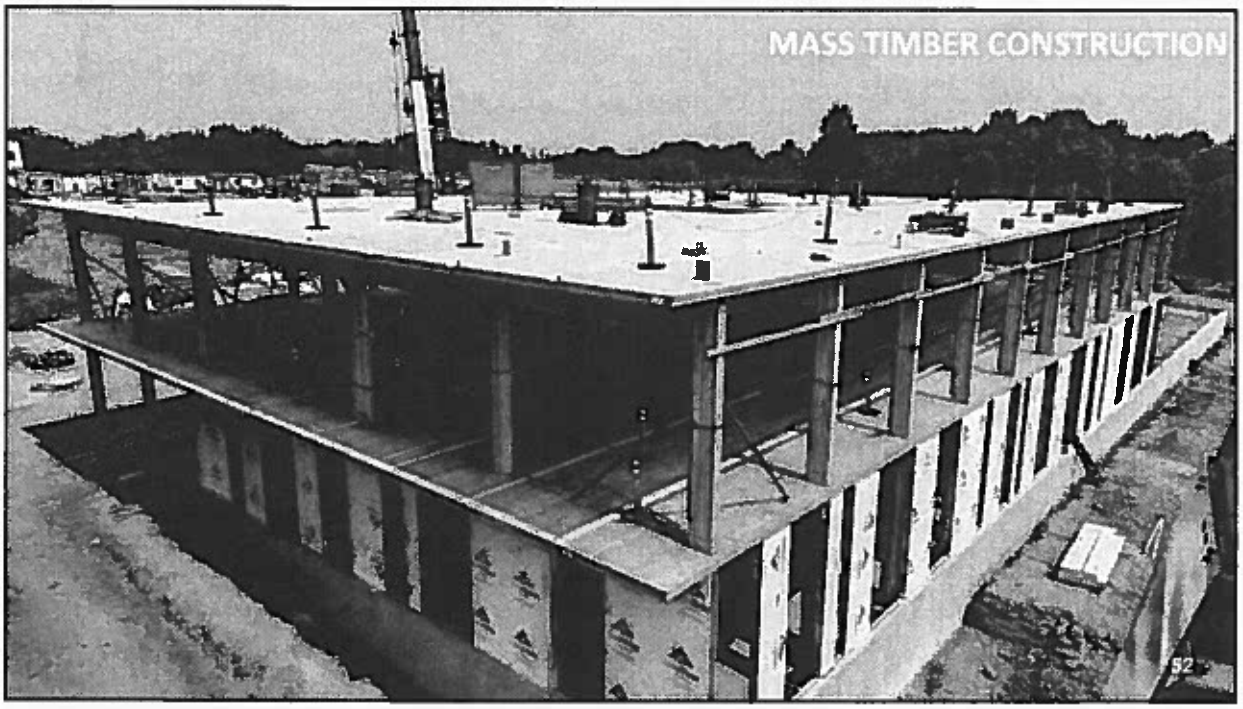

Brockport
Exterior LED Lighting


Environmental Science and Forestry
Bio Mass Steam Turbine Generator & Microturbines


Environmental Science and Forestry
Fuel Cell


SUNY Polytechnic Institute
Solar Domestic Hot Water


Buffalo State
Photovoltaic


MASS TIMBER CONSTRUCTION

UNITED UNIVERSITY PROFESSIONS

Testimony: Funding Our Public Colleges

Presented To:
Senator Toby Ann Stavisky, Chair,
Senate Standing Committee on Higher Education

December 16, 2019

Prepared by:
United University Professions
PO Box 15143
Albany, NY 12212-5143
800-342-4206
www.uupinfo.org

UNITED UNIVERSITY PROFESSIONS

Chairperson Stavisky and distinguished members of the state Senate Standing Committee on Higher Education, thank you for inviting United University Professions to testify at this hearing regarding capital funding for public higher education in New York State.

This is an important issue for our union. The learning environment of our students is the working environment of our members, and our state-operated campuses are the economic and social drivers of their communities. As Governor Cuomo said in 2016 when he opened a portion of the Second Avenue Subway line, "Public works projects are not just about function – they're an expression of who we are and what we believe."

Our union, 37,000 members strong, believes that the deferred investment in SUNY is overdue and should begin now. That investment should be a statement of what we believe and how our state should lead the way.

SUNY is the largest and most comprehensive higher education system in the United States. Our members are active in the communities that host SUNY's 29 campuses and the satellite campuses of Empire State College. And UUP members serve hundreds of thousands of students and patients at SUNY's public teaching hospitals and health sciences centers in Brooklyn, Buffalo, Long Island and Syracuse.

Answering the call

Preserving and protecting our environment is an issue that's of major concern to UUP—and to me personally. Climate change is real, and we must take action to solve this problem now, before it's too late. It can be done, it should be done, and SUNY is uniquely positioned to accomplish that task.

As the union representing SUNY's workforce, UUP will do all we can to ensure that it's done.

We applaud the Legislature and the governor for the passage of the CLCPA this past spring. That legislation is not just aspirational; it sets goals and standards we must meet if we are serious about preserving our environment. SUNY, which represents roughly 60% of the state's owned property, needs to be part of the solution.

Our new NY25 plan—which sets aggressive but achievable goals that will keep SUNY accessible, promote the health of all New Yorkers, make SUNY a "green" system, increase faculty diversity, and establish long-term, reliable financial resources for public higher education in New York— includes a series of proposals to create a sustainable future for SUNY.

Those proposals would:

- **Show the way to a carbon-free future by achieving a carbon-neutral SUNY by 2025.**
  To make this possible, $25 million per year should be directed to retrofitting SUNY buildings. This funding would be targeted for implementing broad renewable energy options for campuses. A cap and trade system will allow campuses that reach carbon-neutrality to trade their excess carbon credits to other campuses for a funding bonus.

- **Change the way we generate and use energy at SUNY campuses.**
  SUNY can accomplish this by creating microgrids on campuses and partnering with Green Machine, a Buffalo-based company that manufactures lithium-ion powered drive systems that replace traditional diesel engines. These systems have significantly lower operating costs and zero emissions.

- **Establish a pilot program of microgrids and battery storage at five campuses next year**.
  The microgrids will create and store clean energy (solar energy, wind turbine-generated electricity, and other renewable energy options) which would be used by campuses. New Yorkers living near SUNY campuses could access microgrid energy, which would be stored on the campuses.

  Once the concept is proven and successful, the program can be expanded to all SUNY campuses by 2025. This campus-community partnership will result in savings for taxpayers, in

addition to millions of dollars that can be redirected to educational programming at SUNY.

- **Establish new and expand existing sustainability programs at SUNY campuses.**
  The SUNY College of Environmental Science and Forestry should be the lead institution nationally for dealing with the climate crisis. Under NY25, SUNY ESF would expand and strengthen its sustainable energy programs and undertake research to mitigate and solve climate change.

  In addition, $5 million should be directed for a grant program to expand existing certificate, associate, and baccalaureate sustainability programs across SUNY. Funding should grow by $5 million per year, reaching $25 million by 2025. This program will train and retrain professionals in green energy and sustainability jobs across New York.

Mandate sustainability

Any state-funded capital projects for public higher education should include environmental sustainability requirements to mitigate the impacts of global warming and help SUNY transition to sustainable energy use. These mandates must be tied to the state's investment.

New buildings and new construction projects at SUNY should not be designed to simply meet the energy and environmental goals of today. They need to meet the energy goals of 2040 or 2050. The construction of new buildings or any major renovations to existing structures must result in carbon neutrality. These projects must employ cutting-edge building technology, which some of our ESF members are working on.

Also, the growing list of maintenance projects across SUNY that have been deferred due to budget cuts and disinvestment in our higher education system must be addressed. Each of these projects should be reviewed and updated to meet energy efficiency standards.

SUNY officials and our members at individual campuses have told us that many of these projects can produce a large reduction in energy usage and lead to cost savings our campuses desperately need, as year after year we are learning of the budget gaps our campuses are facing.

Big ideas

We must never forget that addressing the climate crisis is not just an environmental necessity, it is also necessary to promote racial and economic justice. Our ideas are big ideas. They are ambitious. And they come from people who live in communities across the state. These are working-class Americans who believe it's time to step forward and challenge our elected representatives to be about the work of making our world better for those who come after us.

Robert Kennedy put it best when he said, "The future is not a gift. It is an achievement." We must do all we can to preserve the environment for the generations that will follow us. It is our responsibility, and it is a responsibility that we cannot—and should not—shirk.

Conclusion

On behalf of the entire UUP membership, I'd like to thank you for the opportunity to address you today.

Our hope is that the information we've provided will help illuminate these issues and explain why it's necessary for the state to invest in SUNY and allow our University to lead the state as it transitions to clean energy.

We greatly appreciate your time.

Thank you.

Dear Senator Stavisky et alia:

My name is Martin Manjak, and I am the Chief Information Security Officer at the University at Albany. I've served in this position since 2004 and have worked at UAlbany in information technology since 1994.

I'm writing about the costs of defending SUNY against the threats posed by cyber criminals and nation states, threats that can disrupt every aspect of a campus's administrative, academic, and research activities.

In the past ten years, the losses and damage suffered by American businesses, not-for-profits, and government entities due to cybercrime and the theft of intellectual property has grown exponentially and can be measured annually in billions of dollars.

We're all familiar with the financial losses and operational disruption caused by ransomware targeting municipalities, hospitals, and school districts. In 2018, the FBI estimated the annual cost of internet-enabled fraud at $2.7 billion [1], and that is only a portion of the total loss that can be attributed to cybercrime.

The individual units of the State University of New York operate in the same milieu as the rest of the American economy. They depend on the same technologies and network connectivity as other businesses. They are home to the personal information of hundreds of thousands of New Yorkers. They conduct high value, applied research in partnership with the federal government. Consequently, they are subject to the same onslaught of criminal and nation state threats as the rest of the country.

We should also keep in mind the special threats that target our international students who are subject to very specialized attacks that prey on their vulnerability as residents in a foreign country.

Therefore, SUNY must find the means to defend itself from the ever-increasing number and type of cyber threats.

To cite one example, in the spring 2019 term, the University at Albany was subjected for the first time to distributed denial of service attacks. We had never been targeted before by this type of attack which overwhelms applications, servers, and network connections, rendering them inoperable and inaccessible to the University community. We were essentially, dead in the water because no one could reach the campus or connect internally because the network was buried in a flood of junk traffic. After various internal solutions proved ineffective, the University was forced to purchase protection from a vendor at the out-of-pocket cost of over $150,000, per year. This was not a budgeted-for expense. It was basically extorted from us to restore normal operations.

Every week, hundreds of University faculty are subject to fraudulent email requests from cyber thieves posing as the president, their dean, or department chair.

Ransomware is only a click away in the form of a fake invoice sent to a select group of staff who work in accounting offices, addressing them by name and pretending to come from a colleague who regularly corresponds with them about financial transactions.

At any time on any given day, the campus is being scanned for vulnerable computers, or fending off active exploit attempts from China, Russia, Iran, Brazil, the Ukraine, Taiwan, Romania, etc., etc.

Even our buildings with their environmental and electrical controls are subject to attack.

The range of threats, their increasing sophistication, and the volume of activity require specialized equipment, a dedicated facility in the form of a security operations center (SOC), and trained staff. Cyber security is neither simple nor cheap.

I don't know of any campus that has enough resources in the form of software, equipment, a SOC, and personnel to mount and sustain an effective defense.

Nevertheless, at the very minimum, campuses must demonstrate regulatory compliance with state and federal security requirements, that, while necessary, are increasingly onerous and prescriptive.

All this means less money for faculty development, graduate student stipends, research activity, lab equipment, student support services, professional development, and facility maintenance; in other words all the aspects of higher education that enrich a student's experience and attract top level teachers to SUNY and New York State.

It's our obligation to protect the personal information that we collect from students. They shouldn't have to pay to safeguard what we require from them. NY State should honor its commitment to its students and not shortchange them on these other aspects of their education by making them pay to defend their data.

Please keep those thoughts in mind when you are considering appropriations for the State University of New York.

Thank you.

Martin Manjak, CISSP
CISO, University at Albany

[1] https://www.fbi.gov/news/stories/ic3-releases-2018-internet-crime-report-042219

Testimony of Richard Smardon PhD SUNY Distinguished Service Professor Emeritus
Representing United University Professionals
Before the NY Senate Committee on Higher Education December 16, 2019
Regarding Capital Funding for Higher Education and the NYS Climate Leadership and Community Protection Act (CLCPA) Implementation

Good afternoon: I am Dr. Richard Smardon SUNY Distinguished Service Professor Emeritus at the SUNY College of Environmental Science and Forestry (SUNY ESF) where I taught for 36.5 years. I have been asked by the United University Professionals (UUP) and the NYS Senate Committee on Higher Education to present testimony on capital funding on higher education with respect to the implementation of the *NYS Climate Leadership and Community Protection Act* or CLCPA. UUP is concerned with budget support for SUNY and CUNY in implementing CLCPA especially job training and educational program development.

One of the courses that I taught for a decade was *Environmental and Energy Auditing* that involved having students work directly with CNY communities with green house gas (GHG) baseline audits and Climate Action Planning (Ramsden et al 2014). Much of this effort has advanced CNY communities in reducing their GHG emissions. I have also worked with the SUNY/ESF to initiate their involvement in submitting sustainability data to the National American Association for Sustainability in Higher Education (AASHE) STARS certification and ranking system. I have also been involved in an effort to establish a *New York State Energy Conservation/Global Warming Consortium* (Smardon 2003). I was one of the core faculty members for the development and delivery of the graduate *Certificate for the Advancement Studies of Sustainable Enterprises* (CASSE) at Syracuse University and SUNY/ESF. Lastly I have been involved with developing systems based sustainability higher education courses and curriculum during the last decade, which was published in a recent book (Focht et al 2019).

Given the passage of the *NYS Climate Leadership and Community Protection Act* and the ambitious targets for reduction of GHG –the following are some initial thoughts:

Section 7 of the act it states that " all state agencies will assess and implement strategies to reduce GHG emissions" So this would include the *State University of New York* (SUNY) and the *City University of New York* (CUNY).

In section 7-2 calls for "consistency of actions in attaining GHG emission reductions and a detailed statement of justification why such limits/criteria may not be met, identify alternatives or GHG mitigation measures to be required". So all SUNY and CUNY campuses will need a baseline GHG accounting (ACUPCC 2009, CACP 2009, and Sinha et al 2010) and then a climate action plan (ICLEI) to address the amount of GHG reduction needed plus means for doing such. Throughout the SUNY system, different campuses are at different levels of GHG accounting and climate action planning. For instance campuses like SUNY Albany and SUNY ESF are far ahead in

this regard and are registered on the *American Association for Sustainability in Higher Education* (AASHE) STARS assessment system and have been for some time. I checked the AASHE STARS 2019 listing of all NYS campuses listed (Appendix A). Some 11 SUNY Campuses are listed and ranked. Some 14 other SUNY and CUNY institutions have reported but not ranked including the City University of New York campuses. So if there are some 64 SUNY campuses including all the state community colleges- some 11 campuses need less budget assistance complying with CLCPA. Some 12 campuses need more assistance and 41 other SUNY Campuses have not reported to AASHE STARS so one would assume these are the campuses that need the most help complying with CLCPA.

From the basic GHG accounting and climate action plan individual campuses will need to move toward non-carbon renewable energy sources. Campus-by-campus assessment will be needed utilizing a standard method for GHG baseline accounting and assessment of alternatives. Action options may include buying certificates of renewable energy, developing renewable sources on campus, buy into community renewable energy sources, and in the worst case - consider offsets.

According to the SUNY testimony to the *Assembly Higher Education and Environmental Conservation* hearing on November 13 of 2019 (Megna & Bee-Donohoe 2019) and Chancellor Johnson (CGCC 2019, Rackmyer 2019) – SUNY has enlisted 16 SUNY campuses and four private universities to incentivize development of additional energy projects through aggregated purchase of renewable energy. These campuses are part of the *NY Higher Education Large Scale Renewable Energy* (NY HE LSRE) *Consortium*. SUNY Administration is in the process of developing the RFP for initial campuses to be followed by a roll out to individual campuses. Although this is laudable – I don't think this is enough. Please see my following comments regarding measures that will be needed to fully comply with the *NYS Climate Leadership and Community Protection Act* or CLCPA. These measures include; 1) SUNY campus physical plant energy and GHG reductions, 2) accounting and assessment method research and 3) work force training program development.

SUNY Campus physical plant energy and GHG reduction: So the Five-year capital budget should include technical assistance for all SUNY and CUNY campuses for GHG baseline assessment plus climate action planning. The amount of assistance will vary from campus to campus depending on the size of the campus plus what in house work has already been accomplished. An average figure might be $100,000 per campus per year for the 41 non STARS SUNY campuses and a lesser amount for the 14 listed SUNY & CUNY campuses. As an example SUNY/ESF spent $8,315,513 (or $831,551/year) for energy /GHG reduction work over a ten year duration The Five-year capital budget would also include specific amounts to monitor each use in individual buildings, electrification of water and space heating, use of appliance energy standards, annual energy benchmarking, use of performance contracting as well as development of renewable energy. Such work is proposed as part of SUNY Chancellor Johnson's *Clean Energy Roadmap* announced in April of 2019.

Another key accounting issue, while reducing GHG, is lifecycle analysis of campus building materials and systems as well as carbon sequestration. Such work is currently being done at SUNY/ESF and other SUNY research centers

Accounting and assessment method research: Another area for a five-year capital budget would be the development of specific methods and tools needed for implementation of the *NYS Climate Leadership and Community Protection Act.* A partial list drawn directly from CLCPA could be developed with the SUNY Research Foundation, NYSERDA, NYS DEC climate office and other relevant state agencies. A consortium of NYS campuses engaged in climate research has been proposed in the past (Smardon 2003) as well as considered by NYS DEC's climate office. Such work could be part of the *NY Higher Education Large Scale Renewable Energy* (NY HE LSRE) *Consortium*. Specific method and tool climate development could include:

- **Assessment tools for measuring reductions in energy use** in existing campus and other buildings, including the beneficial electrification of water and space heating in buildings, appliance efficiency standards, appropriate building energy codes, annual energy benchmarking, and expanding the ability of state facilities to utilize performance contracting. Existing tools such as *Clean Air Cool planet* and others exist, but determining the best base line assessment system and methods will insure standardization of GHG accounting. The *Syracuse Center of Excellence in Environmental and Energy Systems* could take the lead in this area.

- **Testing and evaluating the best available economic models, emission estimation techniques and other scientific methods**, the total potential costs and potential economic and non-economic benefits of the GHG reduction plans plus increasing the availability of such. Again there are methods that already exist but compiling case studies of application of such models and methods to specific SUNY and CUNY campuses would greatly assist other campuses needing the use of such models and methods. The testimony of Dr. David Amberg, Interim SUNYESF President is one such example of such ongoing efforts on the SUNYESF campus. Again the *Syracuse Center of Excellence in Environmental and Energy Systems* could take the lead in this area.

- **Review and testing of methods to calculate economic and social benefits of GHG emission reductions**, taking into account the value of carbon, established by 75-0113 plus other tools that can be used to assess environmental, economic and public co-health benefits.

- **Develop and test methods to quantify GHG offsets with an emphasis on maximizing public health and environmental benefits** – especially localized benefits for disadvantages communities. This could be a series of demonstration projects pairing SUNY and CUNY campuses with local

disadvantaged communities. An example is the work of my students in the Environmental and Auditing course that worked with the *Central Regional Planning and Development Board* to do carbon footprinting and climate action planning for several CNY communities from 2000 to 2014 (see Ramsden et al 2014). Another example is SUNY Binghamton's work assisting with three communities in the southern tier with community solar energy development (see appendix B).

- **Develop and test methods of calculating the social cost of carbon**, including;
    - The monetary estimate of the value of not admitting a ton of GHG equivalents, and/or
      The marginal cost of GHG abatement costs, or
    - The global economic, environmental and social impacts of emitting a marginal cost of GHG emissions into the atmosphere utilizing a range of appropriate discount rates, including a rate of zero.

- **Test methods for assessing and identifying the contributing sources or categories of sources**, including but not limited to, stationary and mobile sources and for estimating their relative contribution to elevated exposure to our air pollution in impacted communities. Special attention, in this regard, need to be paid to disadvantaged communities subject to past and present environmental justice impacts. SUNY *Center for Environmental Health and Medicine* faculty members at SUNYESF and Upstate Medical University have been working in this area to address environmental health and justice issues of air pollution as well as other SUNY and CUNY faculty members. Also the *Center of Excellence in Atmospheric and Environmental Prediction* at the University at Albany is currently involved with ozone monitoring and measurement.

- To test **implementation of easily replicated renewable energy projects**, including solar arrays, heat pumps, and wind turbines that would service public low-income housing in suburban, urban and rural communities. This could be done by development of a renewable energy project and pairing a SUNY or CUNY campus with a specific low-income housing area. SUNY Binghamton is working to assist three communities in the southern tier with community solar energy development (see appendix B).

- **Develop minimum percentage of energy storage projects that would deliver clean energy benefits into NYSIO zones that serve disadvantage communities**. Again we propose demonstration pairings as described above. *SUNY Binghamton Northeast Center for Chemical Energy Storage*, the *Center for Energy-Smart Electronic Systems (ES2)* has specific expertise in this area. Such researchers should be working more collaboratively with other SUNY and CUNY researchers in this area such as *Center of Advanced Energy*

Research and the *Center for Integrated Electric Energy Systems* at SUNY Stony Brook.

Work force training program development: Beside the direct implementation benefits for the *NYS Climate Leadership and Community Protection Act* through the *NY Higher Education Large Scale Renewable Energy* (NY HE LSRE) *Consortium.* SUNY and CUNY campuses could develop professional development, certifications and training programs to be offered on campus and extension to off campus individuals for job creation as called for in the Act 75-0113. This is called for within SUNY Chancellor Johnson's *Clean Energy Roadmap*. Many SUNY and CUNY campuses have on campus and asynchronous courses in this area (See Appendix C). SUNY Buffalo, Cortland, and Oswego have clean energy masters degree programs. SUNY Canton, Cobleskill, and SUNY ESF offer bachelors degrees. SUNY Delhi, Hudson Valley, and Sullivan offer Associate degree programs. And SUNY Morrisville, Schenectady and Ulster offer work force development extension courses. But there is much more to be done in developing appropriate curriculum and courses throughout all the SUNY and CUNY campuses including the community colleges for job training. The latter may be the best opportunity for work force and economic development.

The Five-year budget for such a SUNY Consortium involving research, demonstration and job training is estimated at $1 million per year to support such programs. Another model is to set up a small competitive grant program as part of the *NY Higher Education Large Scale Renewable Energy* (NY HE LSRE) *Consortium* whereby multiple NYS campuses compete for seed grant funding in for one of the above described research and implementation areas. The seed grants are then used to compete for larger extramural grants. Another program within the existing *NY Higher Education Large Scale Renewable Energy (NY HE LSRE) Consortium* could be a demonstration seed grant program that would pair a SUNY campus with a disadvantaged community needing access to renewable energy and storage and or air quality mitigation. Such a program structure was implemented through the NYS *Great Lakes Research Consortium* for over 25 years at SUNYESF. I was the co-director for 20 of those years.

References Cited

ACUPCC. 2009. *Reporting System*. Association for the Advancement of Sustainability in Higher Education [on line] http://acupcc.aashe.org

AASHE undated The Sustainability Tracking, Assessment & Rating System (STARS) is a transparent, self-reporting framework for colleges and universities to measure their sustainability performance [online] https://stars.aashe.org/

Amberg D. 2019. *Testimony of Dr. David Amberg, Interim President, SUNY College of Environmental Science and Forestry Before the Standing Committee on Higher Education and Assembly Standing Committee on Environmental Conservation*

Regarding the Environmental Footprint of Colleges and Universities in New York November 13, 2019, 3p.

Clean Air Cool Plant (CACP) [accessed 12/03/2019] https://changingthepresent.org/collections/clean-air-cool-planet

Clean Air Cool Planet Campus Carbon Calculator, Version 6 2006. [on line] http://www.cleanair-coolplanet.org/toolkit/inv-calculator.php

Columbia Greene Community College (CGCC). 2019. On Earth Day. *Chancellor Johnson Announces SUNY is on Target to Meet Statewide Energy Use Goals.* Columbia Greene Community College [on line] https://www.sunycgcc.edu

Focht W, Reiter M A, Barresi P A and Smardon R. C. 2019. *Education for Sustainable Human and Environmental Systems: From Theory to Practice.* CRC/ Routledge/Taylor and Francis. London and New York.

ICLEI 100% Renewable Cities and Regional Road map [accessed 12/03/2019] https://iclei.org/en/100REcitiesroadmap.html

Megna B and Bee-Donohoe. 2019 *The Environmental Footprint of Colleges and Universities in New York State.* Testimony presented to the NYS Assembly on Higher Education and Environmental Conservation Hearing November 13, 2019.

Rackmyer, T. 2019. New Partnerships Show a Renewed Focus on Renewable Energy. SUNY Research Foundation [on line] https://blog.suny.edu/2019/09/new-partnerships-show-a-renewed-focus-on-renewable-energy

Ramsden C, Smardon R C, Michel G. 2014. Municipal collaboration for carbon footprinting; Syracuse, New York case study. *Sustainability Accounting Management and Policy Journal* 5(2): 224-254 doi 10.1108/SAMPJ-09-2012-003

Sinha p, Schew W A, Sawant A, Kolwaite K J, Strobe S A. 2010. Greenhouse gas emissions from US Institutions of Higher Education. *Journal of the Air and Waste Management Association* https://www.tandline.com/loi/uam20

Smardon R C (ed.) 2003. *SUNY Conversations in the Disciplines: The Feasibility of a New York State Energy Conservation/Global Warming Consortium.* Randolph G. Park Environmental Institute, SUNY College of Environmental Science and Forestry, Syracuse NY [on line] https://www.esf.edu/es/pack/conversation.pdf

SUNY Center for Environmental Health and Medicine [on line] http://sunycehm.org/

SUNY .2019. Chancellor Kristina Johnson Announces New SUNY Clean Energy Roadmap on Partnership with New York State Agencies to Accelerate Progress

Toward Governor Cuomo's Goals [on line] https://www.suny.edu/suny-news/press-releases/04-2019/4-30-19/clean-energy-roadmap.html

Appendix A: NYS Institutions of Higher Learning reporting and ranking in the AASHE STARS system [accessed on line 12/4/2019]
https://reports.aashe.org/institutions/participants-and-reports/

SUNY Campuses with STARS rating

SUNY/ESF	gold
SUNY Cortland	gold
University at Albany	gold
SUNY Oneonta	silver
Binghamton University	silver
SUNY Brockport	silver
SUNY New Paltz	silver
Onondaga Community College	silver
Orange County Community College	silver
SUNY Geneseo	silver
Alfred State College	bronze
SUNY Fredonia	bronze

Other SUNY & CUNY campus STARS Reporting (No ranking)

SUNY Purchase
SUNY Adirondack
SUNY Jeffersonville
Schenectady County Community College
SUNY Upstate Medical University
SUNY at Canton
SUNY at Cobleskill
SUNY at Farmingdale
SUNY at Old Westbury
SUNY at Potsdam
Stony Brook University
Suffolk County Community College
Sullivan County Community College
The City University of New York

Appendix B: Current Clean Energy Research at SUNY Campuses gleaned from the SUNY Research Foundation database as of December 6, 2019. 44 out of 84 projects are summarized, by SUNY Institution below:

Binghamton University projects include research in solar panel materials, fuel cells, micro-bio-photovoltaic (PV), PV manufacturing, wind energy development
Plus specific renewable energy projects; Lodestar Energy solar in the Town of Nichols Tioga County, Town of Walton, Delaware County, Town of Goshen, Orange County

SUNY Center for Environmental Health and Medicine at SUNY/ESF and Upstate Medical University. Faculty members address environmental justice issues tied to environmental pollution and other factors such as disease vectors.

SUNY Polytechnic Institute is doing research projects on commercialization of SAVD solar cells and photovoltaic manufacturing

SUNY ESF renewable energy work is focused on forest biomass carbon cycling in NY Forests, environmental and economic impacts of processing woody biomass feed stocks plus the logistics of doing so. Some faculty members are engaged with life cycle analysis of building materials and carbon sequestration.

Stony Brook University's research projects include; integrated energy with molten salt battery storage energy systems (ESS), thin-film solar nanostructure electronic catalysts in fuel calls, hydrogen fuel cells, nuclear energy technology (with Brookhaven Laboratory) and wind turbine tower design

SUNY Albany includes research projects on zone air pollution measurement, wind modeling and forecasting, climate change effect of renewable energy generation in NYS, solar load forecasting with high definition sky imaging

SUNY Buffalo energy research projects include; space charge dynamics with complex materials for solar energy conversion, systems for making solar hydrogen, catalysts for polymer electrolyte membrane fuel cells, reversible alkaline membrane fuel cells, methanol fuel cells and structural responses to short term winds of hurricanes and downdrafts.

Appendix C: Clean and Renewable Energy SUNY courses and programs
SUNY Albany – Alternative Energy Courses [online]
https://www.albany.edu/nysgreenbiztoolkit/46826.php

SUNY Buffalo Focus on Clean Energy Dept. of Electrical Engineering MS degree [on line]http://engineering.buffalo.edu/ee/grad/graduate_programs/engineering-sciences-clean-energy.html

SUNY Canton- Energy Technology Program Bachelors in Technology (BT) [on line]
http://www.canton.edu/csoet/sust/

SUNY Cortland Sustainable Energy Systems Professional Science Masters (PSM)[on line] https://www2.cortland.edu/ses/

SUNY Cobleskill Environmental and Energy Technologies Bachelors in Technology (BT) degree [on line] https://www.cobleskill.edu/academics/schools/agriculture-and-natural-resources/agricultural-engineering/environmental-and-energy-technologies-bt.aspx

SUNY Delhi Integrated Energy Systems Associates Degrees (AAS, AOS)[on line] https://www.delhi.edu/academics/majors-programs/associates/integrated-energy-systems/index.php

SUNY College of Environmental Science and Forestry- Sustainable Energy Management Bachelors in Science (BS) degree [on line] https://www.esf.edu/fnrm/sem/

SUNY Farmingdale State College –Renewable Energy and Sustainability Center [on line] https://www.farmingdale.edu/academics/centers-institutes/resc/index.shtml

Hudson Valley Community College – Clean Energy Management Associates Degree Program [on line] https://www.hvcc.edu/programs/all/stem/clean-energy-management-aas.html

SUNY Morrisville Renewable Energy Training Center technical short courses [on line] https://www.morrisville.edu/contact/offices/renewable-energy-training-center

SUNY Polytechnic Institute – Sustainability and sustainable energy courses [on line] https://sunypoly.edu/green_team/academic.html

SUNY Oswego – Clean Energy systems Engineering in Clean Energy Program [on line] https://www.oswego.edu/news/story/suny-award-boost-training-research-clean-energy-systems

SUNY Schenectady - Alternative Energy Technology work force development extension courses [on line] https://sunysccc.edu/coursex/catalog/AET.html

SUNY Sullivan – Green Building Maintenance & Management AAS degree [on line] https://sunysullivan.edu/green-building-maintenance-and-management/

SUNY Ulster – clean energy training extension certificates [online] https://www.sunyulster.edu/continuing_education/sustainability.php

The State University of New York
Student Assembly

New York State Senate Committee on Higher Education

Testimony of Trustee and President Austin Ostro
State University of New York Student Assembly (SUNY SA)

December 16, 2019

On behalf of The State University of New York (SUNY) Student Assembly, and the 1.4 million students of our great University system, I very much appreciate the tireless efforts of the Honorable Senator Stavisky and her fellow Committee members for hosting this public hearing to address the infrastructure and facilities needs of our institutions across the state.

The Student Assembly is the recognized system-wide student government supporting the students of SUNY. We are comprised of student leaders from across the state and represent the students of the many University centers, colleges, technology colleges, and community colleges in the SUNY system. In addition, we are involved in advocacy on the local, state, and federal level. The President of the Student Assembly serves as the head of the organized student government for all 64 campuses in the system and holds the position of the only student member of the SUNY board of trustees. Twice annually the Student Assembly brings together hundreds of student leaders from across the state and beyond to participate in student leadership conferences, where the organization's advocacy priorities are finalized. Members are offered the opportunity to network and learn leadership skills from students, campus and system administration, and world class faculty through various workshops and lectures.

Student Assembly representatives meet on a monthly basis to coordinate advocacy efforts and further refine strategies towards the advancement of quality and affordability in public higher education. We operate a variety of committees focused on promoting academic excellence throughout the system and highlight areas of campus safety, disability services, gender equity, and sustainability.

As an institution of public higher education, SUNY has an obligation and an opportunity to be a leader in the field of environmental sustainability. SUNY accounts for one of New York's largest energy consumers, with a utility and vehicle fuels budget of over $250 million. Additionally, over 40% of public infrastructure in New York is accounted for by SUNY and our community of students, faculty, staff, and alumni represent more than five million people.[1] Much of the public infrastructure across SUNY was built during the mid twentieth century and is in need of critical maintenance. According to a study by the SUNY Capital Program, approximately "70% of all educational and hospital facilities are 40 years old, and date back to the formation of SUNY itself."[2] Our institutions are in need of investment that will promote our academic offerings and demonstrate environmentally sound practices.

The Governor has established a goal to reduce greenhouse gas emissions by 40% by the year 2030. The New York Power Authority (NYPA), The New York State Energy Research and Development Authority (NYSERDA), and SUNY amongst other agencies, are all working towards this goal.[3] In order to accelerate progress towards this goal our Chancellor Kristina Johnson revealed SUNY's Clean Energy Road Map. This roadmap includes plans to develop

---

[1] SUNY, Sustainability, Capital Facilities https://system.suny.edu/capital-facilities/energy-management/sustainability/

[2] Challenges And Opportunities Within Suny's Capital Program https://sucf.suny.edu/sites/default/files/docs/mcpco.pdf

[3] SUNY, Sustainability, Executive Order 88 https://system.suny.edu/capital-facilities/executive-order-88/

new building efficiency standards, energy management best practices, and a clean energy workforce across New York State. Furthermore, it aims to outline strategies for leveraging SUNY's academic and research capabilities to become a center for developing clean energy technologies and solutions.[4] The infrastructure of the facilities across our system must reflect the research and academic activities of the University through investment by the state.

Our system is responsible for educating students on the social, environmental, and economic impacts of sustainability. It is imperative that the elements of our built and natural environment reflect the UN Sustainable Development Goals. These goals exemplify the top 17 priorities of the United Nations for achievement by the year 2030[5]. Examples include responsible consumption and production, sustainable cities and communities, and resilient infrastructure. The United Nations has signified that the Sustainable Development Goals provide a blueprint for peace and prosperity for people and the planet, now and into the future. With proper state investment we can demonstrate a commitment to sustainability and ensuring safe and livable communities for all.

Many SUNY campuses are enrolled in a variety of statewide and national organizations dedicated to enhancing sustainability culture and practice. More than a third of SUNY campuses are enrolled in The Association for Advancement of Sustainability in Higher Education (AASHE). However, only ten SUNY campuses are reporting for AASHE's Sustainability Tracking Assessment and Rating System. This rating system is designed to provide a framework for understanding sustainability in all sectors of higher education, create incentives for continual improvement, and enable meaningful comparisons over time using a common set of measurements. These measurements guide our campuses with investment into facilities and infrastructure, ultimately providing our system with opportunities for environmental stewardship in communities across the state.

Adequate capital investment in SUNY would allow for our campuses to accelerate the process of retrofitting buildings to meet environmental standards. Upgrading utilities such as water, heating and cooling, and electricity are all major components of our environmental footprint. Proper resource management of water can yield low flow systems that reduce water by millions of gallons. Campus ponds and other bodies of water in our environment can be utilized for irrigation of fields, and green infrastructure can be utilized to ensure proper storm water management measures are taken. Further, heating and cooling costs are also a major expenditure and can be tackled by investment into projects such as green roofs, solar, wind, and geothermal energy where appropriate. Energy efficient lighting and technological devices can also yield great savings as an investment into our campuses and state.

Our institutions operate a variety of buildings at all levels of LEED (Leadership in Energy and Environmental Design) certification. In addition to SUNY infrastructure, The SUNY Polytechnic Institute as well as the College of Environmental Science and Forestry now offer programs specifically designed to enhance the next generation clean energy workforce. The two universities have combined to offer the Green Building Experimental Learning Collaborative, a

---

[4] State University of New York Clean Energy Road Map https://www.nypa.gov/-/media/nypa/documents/document-library/cleanenergy/suny-clean-energy-roadmap.pdf

[5] Sustainable Development Goals Knowledge Platform https://sustainabledevelopment.un.org/?menu=1300

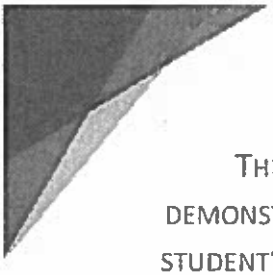
series of courses where students are given the opportunity to participate in LEED certification of buildings and will have the opportunity to prepare for and take certification exams.[6] The Student Assembly supports investment into new academic and research offerings and promotes standards above and beyond those of LEED certification. Furthermore, investment into academic programs for all students in engineering, architectural, or related programs across SUNY will ensure that graduates will enter the workforce with competitive credentials related to environmental standards of building construction and management. It is important to our students, faculty, and staff that our infrastructure demonstrate the highest level of environmental design. We support investment into our built and natural environment that favors complete streets, an approach to design that requires safe and comfortable travel and access for users of all ages and abilities regardless of their mode of transportation. Students with disabilities are entitled equal access to programs and services in compliance with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act. Our educational facilities must promote accessibility for all members of the SUNY community.

An increase in funding for capital and infrastructure will provide our system of campuses across the state the opportunity to provide a quality education that demonstrates the most impactful elements of sustainable development. Investment will enable SUNY to act as a model for other colleges and universities as well as for our students and the community around us. Adequate funding of public higher education will enhance the quality of services offered and will further the goals and actions associated with reducing our carbon footprint ensuring that our communities are safe and livable for all.

[6] SUNY Invests in LEED Education With New Collaborative https://www.usgbc.org/articles/suny-invests-leed-education-new-collaborative-usgbc-new-york-upstate

CUNY UNIVERSITY STUDENT SENATE
TESTIMONY OF FAY YANOFSKY, VICE CHAIR OF FISCAL AFFAIRS
AT NYS SENATE HIGHER EDUCATION COMMITTEE HEARING
ON
CAPITAL FUNDING AT THE CITY UNIVERISTY OF NEW YORK

Good Afternoon, my name is Fay Yanofsky and I am the Brooklyn College Main Delegate to the University Student Senate and the Vice Chair of Fiscal Affairs. We greatly appreciate that you will be listening to our concerns and addressing capital improvements in the proposed budget. We have not received money from the State since 2013. I will be dedicating the rest of my time showcasing photos of mold, pipes, open wires, a broken sidewalks effect on a wheelchair, broken elevators, and a notice of asbestos.

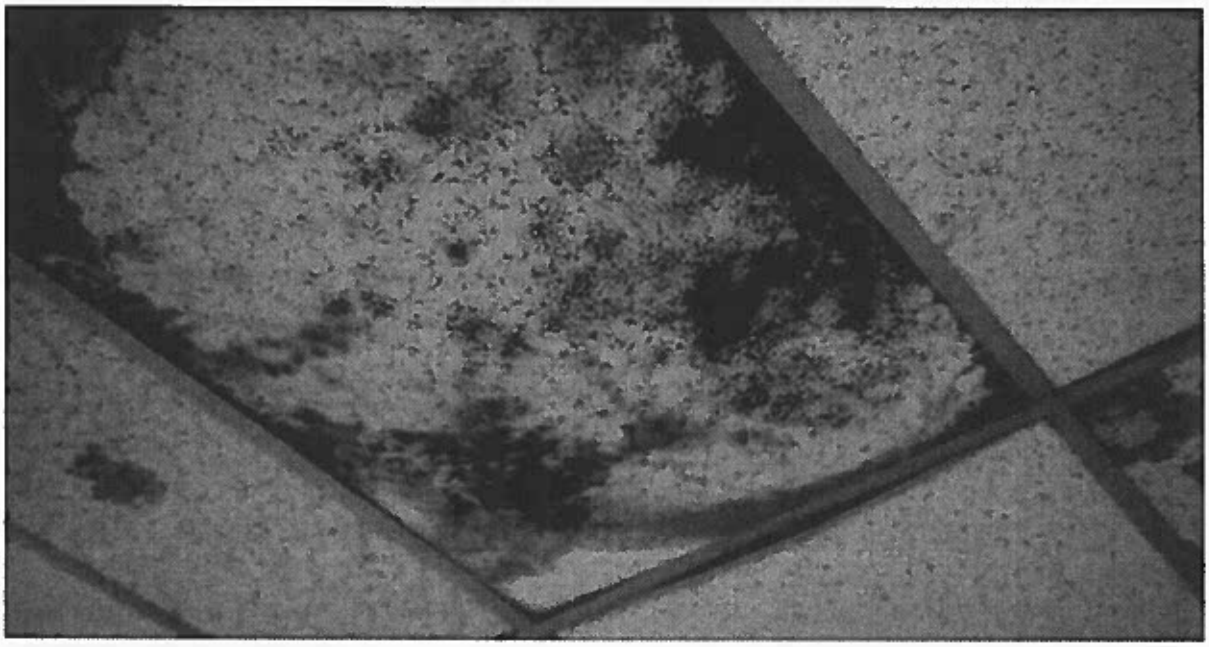


THIS PHOTO DEMONSTRATES A STUDENT'S WHEEL WAS BROKEN BY A BROKEN SIDEWALK.

Queens College

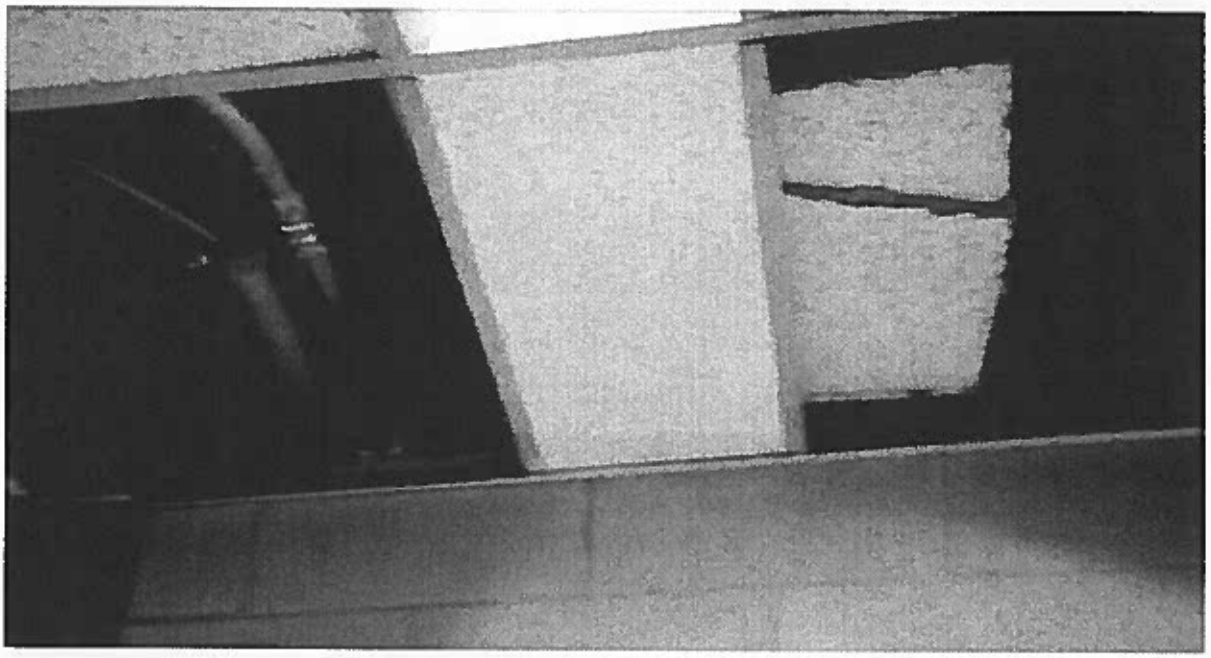
THIS PHOTO DEMONSTRATES A DILAPIDATED WALL.

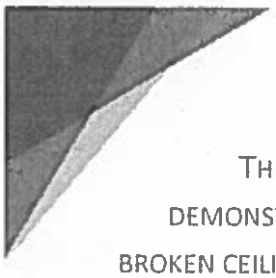
Brooklyn College



THIS PHOTO DEMONSTRATES A CEILING TILE WITH MOLD.

Brooklyn College





THIS PHOTO DEMONSTRATES A BROKEN CEILING WITH WIRES BURSTING OUT OF PIPES.

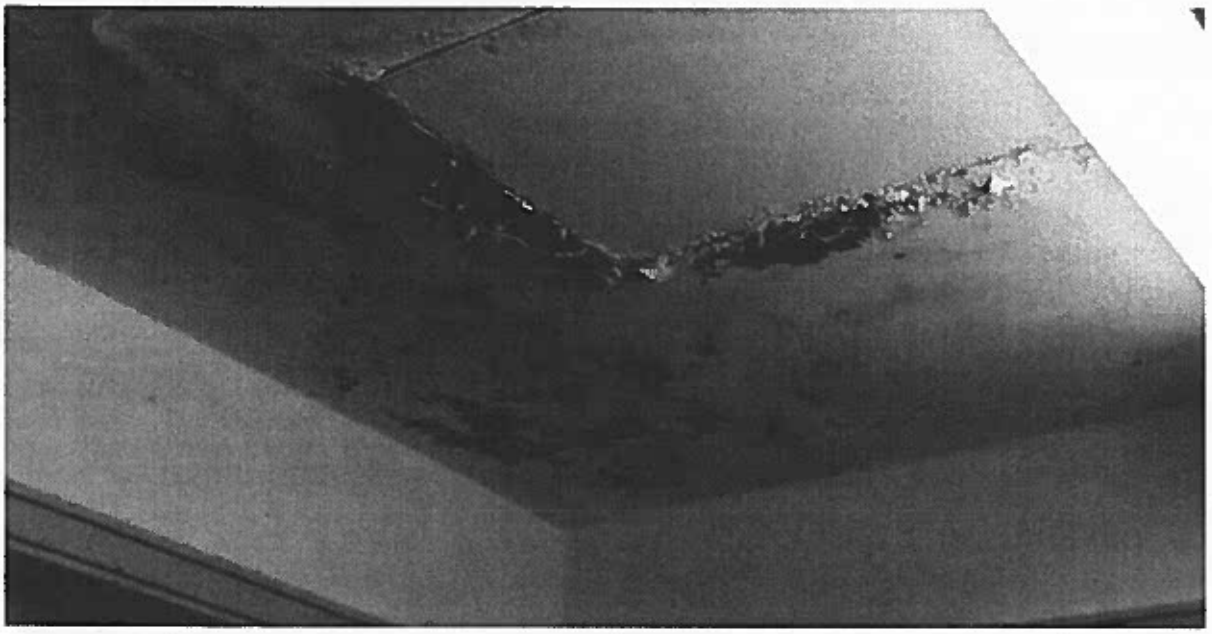
Brooklyn College

THIS PHOTO DEMONSTRATES A RESTROOM WITHOUT WATER ON THE SIGN.

Brooklyn College

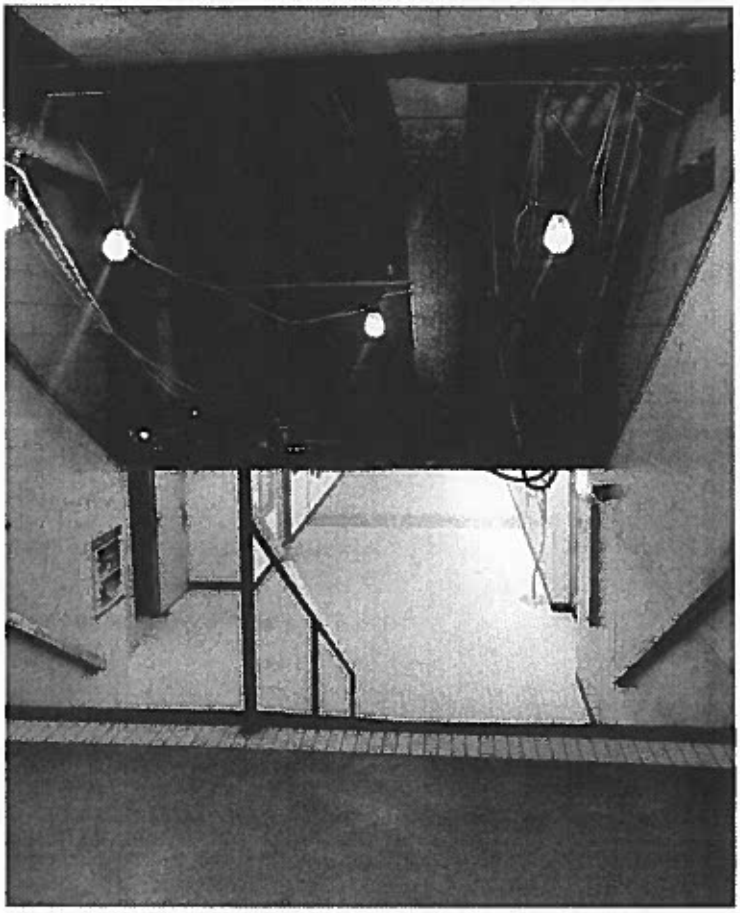
THIS PHOTO DEMONSTRATES A CEILING SLOWLY FALLING APART AND CHIP PAINT.

Brooklyn College

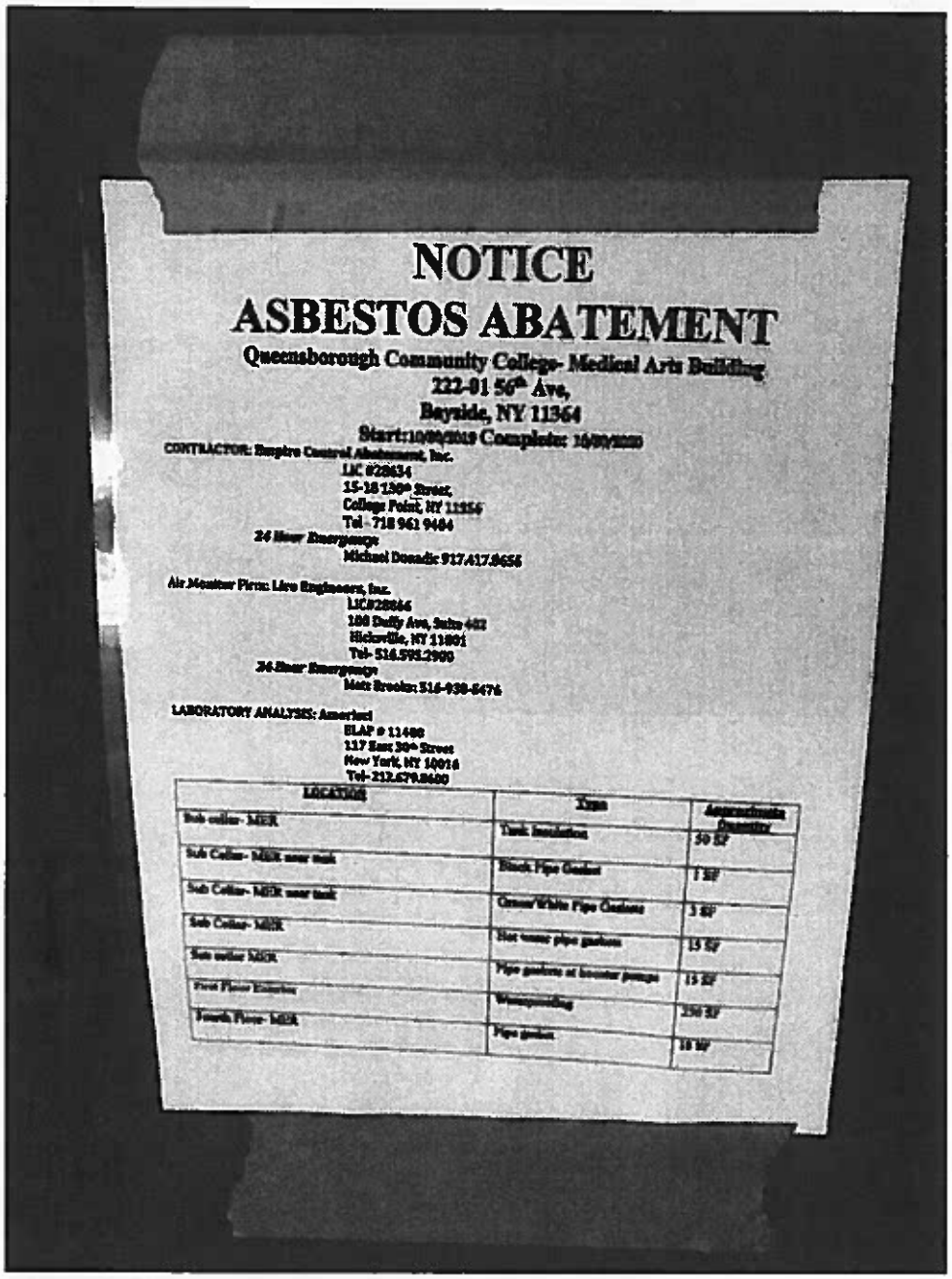


THIS PHOTO DEMONSTRATES WIRES.

City College



Brooklyn College, Broken Elevator



NOTICE
ASBESTOS ABATEMENT

Queensborough Community College- Medical Arts Building
222-01 56th Ave,
Bayside, NY 11364
Start:10/09/2019 Complete: 10/09/2020

CONTRACTOR: Empire Control Abatement, Inc.
LIC #28634
15-18 130th Street,
College Point, NY 11356
Tel - 718 961 9484
24 Hour Emergency
Michael Donadic 917.417.9656

Air Monitor Firm: Live Engineers, Inc.
LIC#28864
188 Duffy Ave, Suite 402
Hicksville, NY 11801
Tel- 516.595.2900
24 Hour Emergency
Matt Brooks: 516-938-8476

LABORATORY ANALYSIS: Ameriest
ELAP # 11480
117 East 30th Street
New York, NY 10016
Tel- 212.679.8600

LOCATION	Type	Approximate Quantity
Sub cellar- MER	Tank Insulation	50 SF
Sub Cellar- MER near tank	Black Pipe Gasket	1 SF
Sub Cellar- MER near tank	Green/White Pipe Gaskets	3 SF
Sub Cellar- MER	Hot water pipe gaskets	15 SF
Sub cellar MER	Pipe gaskets at booster pumps	15 SF
First Floor Elevator	Waterproofing	250 SF
Fourth Floor- MER	Pipe gasket	10 SF

Queensboro Community College

Sakia Fletcher
President
Student Government Association
Medgar Evers College
1657 Bedford Avenue, Rm. S-210
Brooklyn, NY 11225
Sfletcher@mec.cuny.edu
Office:(718)270-6255
Cell: (347) 777-6667

December 16, 2019

Medgar Evers College is the only H.B.C.U. in C.U.N.Y. it is located in central Brooklyn, Crown Heights. The student population is 96% African American, 73% female, and 43% are female single parents, head of household. 80 to 83% of the student population live below the poverty line and the remaining of the student population are considered working poor, (individuals living paycheck to paycheck). Medgar Evers College students, like myself represent a disenfranchised minority student population who have attended a corrupt and segregated K through 12th grade New York City Board of Education public school system.

For those same disenfranchised students who now enter into Medgar Evers College it becomes evident very quickly that educational segregation also exists in the CUNY system. This is evident by the second-rate infrastructural conditions or lack thereof in comparison to other CUNY college campuses.

Medgar Evers College is the only public hi upcollege in CUNY that utilizes portable trailers due to lack of classroom space.

So, what are portable classroom trailers? By way of Google.com, "a portable classroom (also known as a demountable or relocatable classroom, portable), is a type of portable building installed at a school to temporarily and quickly provide additional classroom space where there is a shortage of capacity."

On the other hand, What are portable classroom trailers? By way of Madgar Evers College Students, portable classroom trailers are too hot, too cold, the temperature is never quite right, uncomfortable, ugly, despicable, degrading, inferior, boxed infrastructure that unfortunately both high school and college students have to take classes in.

But more importantly, what do these "temporary" portable classroom trailers represent? They represent 20 plus years of disappointment and failure. Failed leadership from the president of the college who neglects opportunities to campaign and acquire new building space as well as capital investments to build new college infrastructures.

These portable classroom trailers represent lying elected officials. Who say they "care about Medgar students." However, when given the opportunity to transform the Brooklyn Bedford Armory, (public land) into permanent new classrooms in educational facilities approved for the land to be privatized.

These portable classroom trailers represent educational racism and segregation that exists in CUNY. They remind students of color that the City is not willing to invest in the educational infrastructure expansion for black students.

Ultimately, the Medgar Evers College portable classroom trailers represents the State's blatant disregard and neglect in finding capital investments at predominantly black institutions in New York.

What is the impact of portable classroom trailers at Medgar Evers College? The impact is a legacy of caged dreams and hopes. For Medgar Evers College Student who have class in portables we internalizes an inferiority complex that reminds us that it doesn't matter if you made it to college, but your still never make it.

The portables whisper in my ear, Kia, "your too cold, your too hot, the temperature is never quite right. Your uncomfortable and ugly. Your despicable, degrading, and inferior and no matter how hard you try to get out, you will remain in a boxed, caged infrastructure."

But God, I am here! I am here today as a women on a mission to once and for all eradicate portable classroom trailers at Medgar Evers College! But I need your assistance. The legacy of hope is tied to your capital investment. The ideals of academic empowerment is connected to you approving new campus infrastructures at Medgar Evers College. And finally, ladies and gentlemen if you approve to end the use of portables trailers at my college will lead us down the path to social justice.

Thank you,

Sakia Fletcher

Testimony

Mary Beth Labate, President
Commission on Independent Colleges and Universities (CICU)

Monday, December 16, 2019

Senate Standing Committee on Higher Education

"Capital Funding for Higher Education"

New York, NY

Members of the Commission on Independent Colleges and Universities

- Adelphi University
- Albany College of Pharmacy and Health Sciences
- Albany Law School
- Albany Medical College
- Alfred University
- American Academy McAllister Institute
- American Museum of Natural History, Richard Gilder Graduate School
- Bank Street College of Education
- Bard College
- Barnard College
- The Belanger School of Nursing
- Boricua College
- Brooklyn Law School
- Canisius College
- Cazenovia College
- Clarkson University
- Cochran School of Nursing
- Cold Spring Harbor Laboratory, Watson School of Biological Sciences
- Colgate University
- College of Mount Saint Vincent
- The College of Saint Rose
- Columbia University
- Concordia College
- The Cooper Union
- Cornell University
- The Culinary Institute of America
- Daemen College
- Dominican College
- D'Youville College
- Elmira College
- Excelsior College
- Fei Tian College
- Finger Lakes Health College of Nursing
- Fordham University
- Hamilton College
- Hartwick College
- Helene Fuld College of Nursing
- Hilbert College
- Hobart and William Smith Colleges
- Hofstra University
- Houghton College
- Iona College
- Ithaca College
- Keuka College
- The King's College
- Le Moyne College
- Long Island University
- Manhattan College
- Manhattan School of Music
- Manhattanville College
- Maria College
- Marist College
- Marymount Manhattan College
- Medaille College
- Memorial College of Nursing
- Mercy College
- Metropolitan College of New York
- Molloy College
- Montefiore School of Nursing
- Mount Saint Mary College
- Nazareth College
- The New School
- New York Chiropractic College
- New York College of Podiatric Medicine
- New York Institute of Technology
- New York School of Interior Design
- New York University
- Niagara University
- Nyack College
- Pace University
- Paul Smith's College
- Phillips School of Nursing at Mount Sinai Beth Israel
- Pomeroy College of Nursing at Crouse Hospital
- Pratt Institute
- Relay Graduate School of Education
- Rensselaer Polytechnic Institute
- Roberts Wesleyan College
- Rochester Institute of Technology
- The Rockefeller University
- The Sage Colleges
- Samaritan Hospital School of Nursing
- Sarah Lawrence College
- Siena College
- Skidmore College
- St. Bonaventure University
- St. Elizabeth College of Nursing
- St. Francis College
- St. John Fisher College
- St. John's University
- St. Joseph's College, New York
- St. Joseph's College of Nursing at St. Joseph's Health
- St. Lawrence University
- St. Thomas Aquinas College
- Syracuse University
- Teachers College, Columbia University
- Touro College and University System
- Trocaire College
- Union College
- University of Rochester
- Utica College
- Vassar College
- Vaughn College of Aeronautics and Technology
- Villa Maria College
- Wagner College
- Webb Institute
- Wells College
- Yeshiva University

Good afternoon. I am Mary Beth Labate, president of the Commission on Independent Colleges and Universities.

Thank you, **Chairperson Stavisky** and members of the committee for giving me this opportunity to speak on behalf of New York's 100+ private, not-for-profit colleges and universities.

I'm happy to be joined by my colleagues from Cornell and NYU, two institutions that are on the cutting-edge of sustainability.

Higher education in New York can be thought of as a three-legged stool, with private, not for profit colleges working with our colleagues in SUNY and CUNY to offer students a diversity of experiences and choices unprecedented in the higher education arena globally. Educating 40 percent of college students in the state each year – nearly 500,000 students – and awarding 50 percent of bachelors degrees, private, not-for-profit colleges and universities are a critical part of the equation. Our economic impact is also immense: we generate $88.8 billion in economic activity annually and support more than 415,000 jobs. Construction spending by private, not-for-profit colleges and universities totaled $2.2 billion in 2018. That is why I am grateful that our sector is being included in this important conversation regarding capital investments and sustainability.

Private colleges and universities are leaders in sustainability and environmental protection, both in New York and around the country.

Our campuses are at the forefront of research into sustainability and the environment. In every corner of the state, our campuses are engaged in groundbreaking research, without which our shared goal of reducing the global carbon footprint would simply not be possible.

One way this research manifests itself is through the state-supported Centers of Excellence (COEs) and Centers for Advanced Technology (CATs). Five private college campuses in our state operate CATs and COEs with a sustainability focus:

Rensselaer Polytechnic Institute's Center for Future Energy Systems
Clarkson University's Center of Excellence in Healthy Water Solutions (operated jointly with SUNY ESF)
Cornell University's Centers of Excellence in Food and Agriculture Innovation
Rochester Institute of Technology's Center of Excellence in Sustainable Manufacturing
Syracuse University's Center of Excellence in Environmental and Energy Systems

At the same time, we are educating the environmental problem solvers of the future: 38 of our members offer degrees in environmental science, environmental engineering, conservation, and related fields. Many also offer advanced degrees in those fields and employ PhDs who are experts in sustainability and the environment. The research they are doing is helping to lead the national conversation.

I know the focus of this hearing is on the intersection between sustainability and capital planning, so I would like to spend some time discussing that.

Buildings new and old on campus present a huge opportunity for carbon and waste reduction. Private colleges have a commitment to invest in greener infrastructure – replacing or rehabilitating old, inefficient buildings to meet today's and tomorrow's environmental standards.

I'd like to share a small sampling of the sustainability-related infrastructure activities that are ongoing on some CICU campuses. This list is by no means comprehensive, but is meant to provide a sense of the breadth and depth of efforts campuses are already leading.

Colgate University became the first institution of higher education in New York state to achieve carbon neutrality. This is the culmination of over a decade of work to incorporate sustainability into every facet of the college.

The University of Rochester, is seeking to develop density and community connectivity by ensuring that the university's buildings are located on previously developed sites and are within a half-mile of neighborhoods and basic services. This encourages a sense of community and channels development to urban areas with existing infrastructure, protects green spaces, and preserves habitat and natural resources.

Wagner College has taken funds from the state sponsored, Higher Education Capital (HECap) Matching Grant Program, to build a new athletic facility. That facility will feature Sage Glass and Geothermal technology. Sage Glass is metallic sheet imbedded into the glass panels that can automatically or manually tint the glass through a small electrical charge. This eliminates the need for window treatments and eases the burden on HVAC equipment. The geothermal technology will allow Wagner to operate their HVAC equipment much more efficiently using the natural cooling effect of the earth beneath our feet.

New York Institute of Technology (NYIT), recently received a $747,000 grant from the U.S. National Science Foundation to establish a research coordination network with other universities and organizations. The group will study food, energy and water conservation and sustainability in relation to urban development.

Bard College has partnered with Project Drawdown, a research organization, to put one hundred comprehensive climate change solutions into action on the Bard campus and in the surrounding area.

Fordham University is one of many New York private colleges that has committed that all new buildings on campus will be designed to the stringent LEED environmental standards. Already, Fordham has used funds from the Higher Education Capital (HECap) Matching Grant Program to help finance construction of two LEED-certified buildings on campus. In July, Governor Cuomo recognized Fordham's progress and leadership toward campus sustainability when he chose the university as the site to sign the landmark Climate Leadership and Community Protection Act into law.

More than half of CICU's members participate in NYSERDA's REV Campus Challenge which promotes clean energy efforts by recognizing and supporting colleges and universities around New York State that implement clean energy solutions on campus, in the classroom, and in surrounding communities.

These stories are just the tip of the iceberg (that we must stop from melting). CICU is committed to amplifying the successes our campuses have had.

CICU is also committed to leading by example.

Recently we signed an MOU with NYSERDA to support sustainability efforts across our sector.

Pursuant to the MOU, we will work with NYSERDA and our member campuses to increase education about sustainability programs offered by the state and connect campuses that are at the beginning of their sustainability journey with those that have more experience. We hope to provide mentorship so that every private college campus in New York, be it large or small, urban or rural, is working toward the same sustainability goals. We will also be creating an energy committee to help NYSERDA identify best practices and common challenges in the march to carbon reduction and sustainability.

So what can the state do to continue supporting the leadership that is showcased at Independent institutions?

First, **continue supporting the state-funded Higher Education Capital Assistance Program (HECAP).** We know that in the long term, building green makes sound economic sense and is an environmental imperative, but getting there can stretch the budgets of many of our campuses. HECap helps campuses make those investments. HECap has a required 3:1 match, prevailing wage requirements, and MWBE requirements.

Currently HECap receives $30 million in funding from the state. The Governor proposed to zero out funding for the program in the current year budget and we so appreciated your steadfast support in seeing that the funding was restored. While $30M pales in comparison to the $6.1 billion in new capital appropriations that SUNY and CUNY are slated to receive over the next 5 years, for private colleges that must depend on tuition revenues to maintain its infrastructure, it is welcomed and important source of funding. I would strongly argue that a $30M investment is a small price to pay to help support a sector that educates more students than either SUNY or CUNY.

Second, understanding that one of the biggest barriers to making college campuses more sustainable and environmentally friendly is financial, **the state should create new funding streams,** similar to the HECap program, that would help private colleges and universities achieve their sustainability goals faster and would serve as an example for other industries in the state.

Lastly, I encourage everyone to think holistically. For years and including in my former life I heard cries to build new buildings at our public institutions. Before launching into such an expensive endeavor, particularly in the face of a $6B budget deficit, **I encourage the state to invest in common sense partnerships that leverage the existing assets on both public and private campuses.**

Thanks once again for allowing me to testify and for providing a forum to discuss this important issue. I look forward to an expanded partnership between the state and our colleges as we work together to make a sustainable future.

New York State Senate Hearing on December 16, 2019
Committee on Higher Education

Capital Funding for Higher Education
Charlie Kruzansky, Associate Vice President for Government Relations at Cornell University

Thank you for holding this hearing. New York State should be proud of its track record of supporting its colleges and universities with funds to build and renovate facilities. We have over 100 independent institutions and two public systems that enrich our state with students coming to study here and a steady stream of talented graduates who are our future builders, policymakers, scientists, engineers, and entreprenuers.

Congratulations and thanks to you for the recently enacted New York State Climate Leadership and Community Protection Act (CLCPA). We know that without the leadership of the State Senate this state would not have the CLCPA on the books. Senators Jackson, Stavisky, Krueger, Kaminsky, May, Metzger, Harckham, many others and Leader Stewart-Cousins deserve our thanks for making New York the leader on action to deal with climate change.

Higher education is the place to take on major challenges head on through research, education and outreach and global warming is our challenge. SUNY Chancellor Kristina Johnson is one of the leaders in both of these categories – higher education and responding to climate change. We are very fortunate to have her in New York. Columbia University and their Earth Institute has been the preeminent institution on climate science. NYU has done, and is undertaking, groundbreaking projects in conservation, efficiency and sustainability in Lower Manhattan. I am delighted to be on the panel with them and with CICU's President Mary Beth Labate. Mary Beth represents our campuses incredibly well and has made this topic a priority as you will hear from her with her brand new MOU with NYSERDA and her effective advocacy on HECAP.

NYSERDA puts New York in a leading position due to their expertise and investments in technical assistance, research and physical plant improvements in New York's higher education sector. For many years NYSERDA has partnered with Cornell faculty and staff on applied research projects and in making New York more energy efficient. NYSERDA President Alicia Barton visited Cornell on December 5 for a briefing on Earth Source Heat. This project would use deep geothermal to heat Cornell's campus and could be used in other large buildings and building complexes (hospitals, colleges, government and commercial office complexes like the Empire State Plaza). NYSERDA also visited a project they are funding: Cornell-Brookhaven Energy Recovery Linac Test Accelerator (C-BETA) that recovers 99.8% of the electricity used in our particle accelerator. This was first envisioned 54 years ago at Cornell and is now being realized. It will be used at Brookhaven National Lab and will very dramatically reduce the energy used in accelerators world-wide.

First and foremost are the students we educate. We are proud of those who are on campus now and those who have graduated. Many are leaders in their fields, including on environmental issues:

Leading spokesperson on causes and effects of Climate Change Bill Nye (Engineering '77)
Prime author of the Clean Water Act and cosponsor of the Clean Air Act US Senator Ed Muskie (Law '39)
Author of landmark environmental opinions (among others) Justice Ruth Bader Ginsberg (Arts '54)

Students of today are working with Cornell faculty and staff to meet the goals we have set to be carbon nuetral by 2035. Our students were a large part of our reasoning, in 1998, to comply with the Kyoto Protocols covering Greenhouse Gas Emissions and for Cornell President David Skorton to sign the American College and University Presidents Climate Commitment in 2007.

Cornell has committed to be a Carbon Neutral Campus by 2035 and are taking steps to achieve this. In 2007 Cornell President David Skorton was one of the first campus presidents to sign the American College and University Presidents Climate Commitment. See attachments for additional awards and facts.

We have achieved a 50% reduction in carbon emissions since 1990 and know that the remaing 50% is going to be much more difficult. Since the year 2000 Cornell has increased research and other activities by 20% while keeping total energy use constant. Water use has been reduced by 25% since 2005. These reductions have come from many actions, including:

Every building at Cornell is individually metered and monitored by our facilities staff. We have made millions of dollars in conservation and efficiency investments in our laboratories, classrooms, and dorms, including LED lighting to save $5.6 milliion in five years.

Water from Cayuga Lake is sent through a heat exchanger to cool a closed loop of cooling water and returned to Cayuga Lake. This campus cooling system was put in place of electric chillers. We have reduced the use of electricity for cooling by 86% and eliminated thousands of pounds of HCFCs used in condensers. This $60 million Lake Source Cooling project turned on in 2000 is a prime example of the type of investment that must be made in order to reduce energy use and the resultant environmental externalities.

Brand new Cascadilla Community Solar Farm will provide over 3,000 local residents with energy from solar panels built on Cornell's land. Cornell helped launch the NY Higher Education Large Scale Renewable Energy Project that you heard about from SUNY. SUNY and private colleges have teamed up in largest consortium of campuses to solicit new renewable energy projects.

We are planning to use deep geothermal as a way to heat the campus (as mentioned above). This will cost upfront but save money and avoid environmental degregation.

The Cornell Tech campus on Roosevelt Island was built to be the most sustainable campus in the world. It's residential building (The House) was the largest commercial building in North America built to Passive House specs (60-80% better than code) and the largest building at Cornell Tech uses 80 geothermal heat pumps and a solar array to offset all electric use from the grid. It was designed and built to be a "Net-Zero" campus. The waste water and rainwater are collected and reused and the entire campus site was heightened to withstand rising sea levels that we will see in the coming decades.

The academic program at Cornell Tech includes applied technologies in the Built Environment area where our graduate students are already designing devices and algoriths to take to the marketplace to make our state and the world more sustainable, efficient, and equitable.

New York State stands out as a global leader in higher education and our physical environment will be even more of a factor in the coming years. Preeminent faculty and students will locate where they have

the best opportunities. New York State should invest in the buildings and equipment they need. If we do not then this talent will find it elsewhere.

SUNY and CUNY critical maintenance spending has been used very efficiently. Current SUCF projects at Cornell include renovation of Martha Van Rensselaer Hall. This 1933 building (that Eleanor Roosevelt secured the funding for) is being upgraded to include modern HVAC and equipment. We add to all state funded projects at least 10% to ensure that energy efficiency and conservation goals are being met. The average age for Cornell buildings is over 44 years and we intend to use them for many more.

The Higher Education Capital Assistance Program (HECAP) that is administered by DASNY is highly competitive and allows us to renovate and improve our buildings while supplementing our own funding. Philanthropy is not commonly directed toward building renovations and HVAC upgrades, but HECAP opens the door for us to raise private funds for exactly this purpose.

Thanks to the New York State Legislature for adding HECAP funding for your private colleges and universities. You will not find a better investment for the public's capital dollars.

New Opportunities:

Cornell's share of state electric load is one one-thousandth of the NYS peak on an average day. All of higher education aggregated amounts to about 5-7% of NYS total electric load. We are the learning labs where the future is being built and our students are doing it all with us.

We believe that our campuses should be producing clean energy and exporting the excess to our communities. We are doing this with cooling water – sharing our system with the Ithaca School district – and may soon being exporting heat. Electricity is easy to export and we are eager to add wind and solar but find it very difficulty to finance and site these projects. Cornell has had solar and wind projects blocked by local taxing authorities and small numbers of residents. State law should be amended to clarify local tax treatment of solar panels installed on undeveloped land.

A Bond Act that finances upfront costs of clean energy projects and conservation will save public dollars, improve public health, and reduce emissions and GHG. The Public Service Commission and NYSERDA could coordinate with New York's higher education sector to locate clean energy production on our campuses where that electricity or thermal energy is most needed to displace demand or to supplement supply.

Thank you for holding this hearing on capital needs in higher education. There are tremendous opportunities in this sector that will benefit New York and New Yorkers for years to come and I am happy to discuss this further.

CORNELL UNIVERSITY

SUSTAINABILITY SNAPSHOT

August 2019
sustainablecampus.cornell.edu

LEADERSHIP

- Gold Rating in the Sustainability Tracking, Assessment & Rating System (STARS) for 8th year
- Committed to pursuing carbon neutrality & 100% renewable energy for the Ithaca campus by 2035
- Top Ivy institution in the Princeton Review Green Honor Roll, STARS, and Carbon Commitment
- Advancing Earth Source Heat as a breakthrough geothermal technology for carbon neutral heat
- Award-winning Climate Action Plan drove a 36% reduction of campus carbon emissions since 2008

ENGAGEMENT

- 2018 US EPA *Leadership in Green Power Education Award* winner, for efforts to advance access, education, and engagement with renewable energy, especially in low-income communities across New York
- The Cornell Institute for Climate Smart Solutions' online course on climate literacy and communication has reached 2,500+ citizens from 65 countries since launching in 2017
- Launched the *New York Higher Ed Large Scale Renewable Energy* consortium, the largest ever compact of campus working to solicit new renewable energy projects; the group will develop in New York State
- Composting in all residential communities diverts 39 gallons of food waste per week
- Sustainability Management Academy Training for staff has trained 326 managers
- 75 Green Offices and 15 Green Labs certified across most campus units

CAMPUS

- Renewable energy offsets 20%* of campus electricity
- 35% of the food budget goes to local or sustainable food
- Total campus waste is down 1/3 in the last five years; reuse & reclamation doubled in the last year
- *Winter Energy Setback* avoids an average of ~$100,000 in electricity costs each year
- The *Sustainable Landscape Trail* features a walking tour of sites designed by student, staff, and faculty
- Cornell Dining saved over 700lbs of plastic by reducing grab-and-go food packaging
- Grounds Department worked with students to design and build a solar truck to power a fleet of battery-operated equipment with renewable energy

ACADEMICS

- 33% of all faculty are involved in sustainability research, a 3% increase in the last two years
- 18% of all courses include sustainability topics, up 8% in the last two years, spread across 79 departments
- Sustainability governance groups & Cornell Assemblies have all endorsed climate literacy goals for students & staff

NYU | Government Affairs

Government Affairs
665 Broadway
New York, NY, 10012
P: 212 998 2400
government.affairs@nyu.edu

Testimony of Cecil Scheib
Chief Sustainability Officer, New York University
Before the
New York State Senate Higher Education Committee

December 16, 2019

Good morning Chairperson Stavisky, fellow Senators. My name is Cecil Scheib and I am the Chief Sustainability Officer at NYU. I appreciate the opportunity to testify before you today as you consider the capital needs towards the sustainability of colleges and universities across the State.

At NYU, we are committed to becoming one of the nation's greenest campuses. Prior to the passage of the Climate Leadership and Community Protection Act (CLCPA), NYU had pledged to achieve a 50% reduction from 2006 levels by 2025 and carbon neutrality by 2040. This reduction in emissions is something the University has voluntarily undertaken, not only because we believe it is part of NYU's role as an anchor institution in New York, but also because it positively impacts our community. The CLCPA's renewable energy targets have encouraged NYU to refine our plans even further, and I want to take the opportunity to thank the State for their leadership on this legislation.

NYU is a "city in miniature," including apartment buildings, offices, laboratories, gyms, classrooms, and street level retail. NYU is also geographically diverse, with buildings across New York City, and 19 different schools, each with their own identities, priorities, goals and needs. NYU's building emissions represent 0.43% of all building emissions in NYC, and almost 1% of the city's emissions when accounting for our partners at NYU Langone Health. I believe NYU's successes are achievable by other institutions as the state moves towards the targets in the CLCPA. Since 2007, NYU has reduced its emissions by 30%, an amount equivalent to planting enough trees to cover all of Manhattan and all of Brooklyn in forest. These 30% reductions are saving about $15 million per year, and just about everything we did had a 1-4-year payback.

An example is the 2014 renovation of Brittany Hall, a student residence on Broadway at East 10th Street, where we removed heavy #4 fuel oil boilers from the basement, a big source of unhealthy airborne particulates. They were replaced with light natural gas boilers on the roof, far from any potential flood risk, and are ready to be replaced with electric heat pumps when advantageous to do so. The project used no special new technology and reduced heating fossil fuel needs by 81%.

These straightforward retrofits can be cost effective. Even with the addition of air conditioning, Brittany Hall cut its operating costs in half. 370 Jay Street, the previous MTA headquarters in downtown Brooklyn, received LEED Platinum certification and incorporated a range of sustainable features, including green roofs and ice storage to help balance the electric grid. NYU reduced capital costs by retaining and air sealing the existing façade instead of replacing it, which was also a carbon benefit from the construction materials avoided. The extra insulation is also appreciated for its sound control by the students and faculty who use the recording studios there.

NYU | Government Affairs

Government Affairs
665 Broadway
New York, NY, 10012
P: 212 998 2400
government.affairs@nyu.edu

These efforts require upfront investments and strategic planning. New York State has been an important partner for NYU and our nonprofit peers. With debt as the primary source of funding for our capital projects and sustainability upgrades, the Dormitory Authority of the State of New York (DASNY) has been instrumental in helping to facilitate our debt issuance process. DASNY works with NYU to keep the community informed of our plans, and helps to ensure we remain at the forefront in achieving sustainable building goals with the support of the capital markets. Recent transactions include a Green Bond for our 370 Jay Street facility, as well as other LEED-certified projects on campus. Such projects encourage participation by investors interested in environmental, social and governance (ESG) principles. Furthermore, they broaden NYU's investor base, improve our performance in the marketplace, and optimize the University's financing costs. We have also partnered with NYSERDA through many of their programs to help study, plan for and implement our sustainability goals. These existing partnerships with the State are of great help to institutions, but additional assistance can ensure campuses make even greater strides in sustainability.

A major challenge is that the costs of fossil fuel energy as paid by end users does not take into account externalities such as human health, local pollution, and global sustainability. That means that deep energy retrofits of buildings do not always pay for themselves with energy cost savings alone. Due to the prevalence of mass transit for commuting, 99.5% of NYU's direct emissions are from buildings we occupy. This is a challenge facing many institutions, including for-profit businesses, and particularly those with a majority of their operations in New York City and the higher density areas across the state. NYU is doing all it can to reduce emissions through better operations and maintenance, including training over 1,000 workers in green building operations through a program supported by NYSERDA. But to reach the state's carbon goals, major capital investments in buildings will have to be made to take performance to the next level.

Given the resources needed to attempt major emission reductions at this scale, there are many forms that capital assistance and other support that the State could consider offering. NYSERDA offers a Buildings of Excellence prize for high-performing buildings, but since commercial buildings and student residences are ineligible, it is challenging for the higher education sector to participate.

Often, rebates may not be the best way to reduce carbon through capital planning, since the timing of project awards does not align well with development of the capital stack at the outset of the project. Furthermore, tax incentives provide less motivation for large nonprofit institutions, some of the largest land owners and operators in the State. Grants, low- or zero-interest loans, on-bill financing, and other approaches that might directly influence capital allocation in order to bring new, carbon-reducing technologies such as heat pumps to first cost parity with fossil fuel technologies at scale could be hugely influential and demonstrate their success for the market. In NYU's analyses, the marginal cost of deep retrofits and electrification might be half paid back by energy savings over the equipment's lifetime. If that other half could be supported by the State, perhaps costs would eventually drop as installation becomes more common.

NYU | Government Affairs

Government Affairs
665 Broadway
New York, NY, 10012
P: 212 998 2400
government.affairs@nyu.edu

Beyond the extra costs that an institution must absorb simply to install electrified technology instead of increasing its natural gas infrastructure, it must also pay more each year for the energy to run it. While this hearing is focused on capital costs, as a forward-thinking owner, NYU looks at the total lifetime cost, including operating costs. Perhaps programs like ReCharge New York could include preferential treatment for beneficial electrification. Finally, in pursuit of carbon reductions, many institutions find themselves assuming the risk of any early adopter to a newer technology. State support of private higher education efforts to make the electrification transition not only assists with the financial burden, but also helps to validate the technologies for other market sectors and encourages their use.

Another example of an alternate form state support can take is the expansion of funding for the Higher Education Capital Matching Grants (HeCap) program, which enables institutions with a commitment to investing in capital projects to complete these initiatives with grant assistance from the State. Perhaps NYS could create a new funding stream similar to HeCap that would support only projects that reduce an institution's energy emissions. HeCap has been critical for institutions to support state-of-the-art research facilities and a similar outcome can be achieved for deep energy retrofits of buildings.

In addition to reducing energy use in buildings, it is critical for the State to continue and expand its championing of renewable energy initiatives that align with the unique needs of businesses and nonprofit institutions operating in a downstate region. State initiatives such as offshore wind and the connection to northern hydropower are critical to NYU's confidence that our own carbon neutrality plan is legitimate. This shift towards clean power generation and storage for New York is transformational and will face many challenges. However, this is an area where government can play a crucial role, as it has in other areas of the world where renewable energy is more advanced. We look forward to working with the State to continue to develop these energy sources, storage systems, and transportation systems.

Given our own goals and the benefits we have already experienced from our emissions reductions, both economic and non-economic, NYU is supportive of the State's efforts in sustainability and climate change, and we hope we can continue to partner with the State to make even more meaningful reductions. We also hope we can share our experiences with portfolio-wide deep carbon reductions and the planning efforts behind that journey with other institutions seeking to build the capabilities necessary to make incremental improvements. We also envision a sharing culture that draws on the resources of our expert faculty who routinely and actively engage with government on the analysis of climate policy from a legal and data-driven perspective.

We look forward to continuing to partner with New York to make the State more sustainable, reduce the impacts of climate change and ameliorate the effects of waste, pollution, and other environmental contaminants for all residents of New York. We can all work together to make New York State an international leader in sustainability. Thank you again for the opportunity to testify and I welcome any questions you have.

NYPIRG NEW YORK PUBLIC INTEREST RESEARCH GROUP

TESTIMONY
OF THE
NEW YORK PUBLIC INTEREST RESEARCH GROUP
BEFORE THE
SENATE COMMITTEE ON HIGHER EDUCATION ON THE NEW YORK STATE UNIVERSITIES CAPITAL PLAN AND THE ENVIRONMENTAL FOOTPRINT OF COLLEGES AND UNIVERSITIES IN NEW YORK STATE
December 16, 2019
New York, N.Y.

Good afternoon. My name is Santana Alvarado, and I am the Chairperson for the New York Public Interest Research Group (NYPIRG) and a Hunter College student. NYPIRG is a student-directed, non-partisan, not-for-profit research and advocacy organization. Consumer protection, environmental preservation, public health, healthcare quality, higher education affordability, and governmental reforms are our principal areas of concern. NYPIRG has campus chapters across the state at SUNY, CUNY, and some private institutions, from Buffalo to Long Island.

We appreciate the opportunity to testify before the Senate Committee on Higher Education on the need for a five-year Higher Education Capital Plan. Much of our testimony will be centered on the environmental footprint of college campuses and the importance of environmental leadership at colleges across the state. NYPIRG has testified before this committee on several occasions during the past year. In those testimonies, we focused primarily on state funding for higher education. Since the implementation of CUNY/SUNY 2020, public college students have contributed $2.5 billion to a system that has stagnated due to a lack of state funding. We are glad to be able to have a conversation today that is focused on further ways in which New York's public universities can benefit from a long-term capital plan.

Students deserve a safe and healthy learning environment with well-maintained classrooms, functioning, accessible infrastructure like escalators and elevators, and state of the art technology. With the support of a robustly funded five-year capital budget, NY's public colleges could do this – while at the same time executing cutting-edge sustainability plans. A dual benefit aiding student success and tackling climate change.

Institutions of higher education should be paradigms of environmental stewardship both to model behavior for students and because these institutions make up a large portion of New York State's economy. According to a report from Rockefeller Institute, SUNY alone has an economic impact of $28.6 billion.[1] Additionally, New York's private institutions have an economic impact of $88.8 billion,

[1] Schultz, Laura, "The Economic Impact of the State University of New York," Rockefeller Institute, November 1, 2018, https://rockinst.org/issue-area/the-economic-impact-of-the-state-university-of-new-york/

as of 2017.[2] When institutions of higher education adopt good environmental practices, they have the potential to shape the economy and drive good environmental practices forward elsewhere in the economy.

In the face of the global climate crisis, there is a moral imperative for institutions of higher education to lead the path for a more sustainable future. New York's colleges and universities should be models for the rest of the state, and country, to follow.

NYPIRG offers the following as ways for New York's colleges and universities to become these models, outlined further in our testimony:

- *Reduce food waste* by adopting measures to prevent putting out more food than what will be consumed, donating food, and composting.
- *Reduce plastic waste* by eliminating single-use cutlery, straws, and cups, and by not selling single-use water bottles.
- *Lead on climate change* by retrofitting buildings to be more energy efficient, electrifying buildings, investing in renewables, and switching to electric vehicles.

Throughout each of these areas, students should be involved in college and university processes in shaping these policies. In each of NYPIRG's chapters, we regularly hear about the collapsing infrastructure and facilities that make the struggle to get an education that much harder. New York's student leaders know best what projects are most urgently needed, these leaders should be consulted every step of the way in order to ensure a capital plan that is collaborative and serving the most students possible. In New York City alone, CUNY's FY 2020 request of $6.2 billion underscores the breadth of critical maintenance and infrastructure project needs.

REDUCE FOOD WASTE

In the SFY2019-20 budget, the Food Recovery and Recycling (FRR) proposal was passed. This law requires the state's largest food waste generators – supermarkets, hospitals, colleges, large restaurants –to reduce their food waste by first donating any excess food to food rescue organizations and then recycling their food scraps as animal feed or compost. Businesses that generate more than 2 tons (4,000 pounds) of food waste weekly are covered under the law.

In the United States, **an enormous amount of food sold is thrown away.** The result of this waste, which happens at every stage of the journey from farm to fork, is that millions of pounds of food end up rotting in landfills, releasing methane, a highly potent greenhouse gas.

Americans waste about 25 percent of the food purchased. According to the Natural Resources Defense Council ("NRDC"), the average American family throws out $1,500 worth of food every year—some

[2] "Facts About New York State's Independent Colleges and Universities," The Commission on Independent Colleges and Universities in New York, http://cicu.org/publications-research/quick-facts

$164 billion each year.[3] Most of our wasted food ends up in a landfill where methane gas is generated as it decomposes in the absence of air. Methane, a potent greenhouse gas, contributes to climate change. Landfills are the third largest source of methane in the US. In fact, this huge amount of uneaten food ends up rotting in our landfills, where organic matter accounts for 16 percent of U.S methane emissions.[4]

In the United States, food waste is estimated at between 30-40 percent of the food supply. This corresponded to approximately 133 billion pounds of food in 2010.[5] In New York, food makes up 18% of the municipal solid waste stream. An estimated 4 million tons of excess food, edible food not sold or used by its generator, and food scraps, inedible food and edible food not donated, are generated annually in New York State. Each year, more than 97 percent of these food wastes are landfilled or combusted, increasing emissions of harmful methane gasses.[6]

Colleges and universities contribute to this problem. According to Recycling Works, a program in Massachusetts, the average college student generates 142 pounds of food waste per year, and college campuses generate 22 million pounds of food waste annually.[7]

Despite the proliferation of food waste, more than 2.5 million New Yorkers struggle to have enough to eat.[8] Approximately half of today's college students are food insecure.[9]

This is why it is critical colleges and universities lead early on in complying with New York's food waste law. The state estimates that if even 5% of currently wasted food from major generators was donated, food banks would see a 20% increase in available food for hungry New Yorkers.[10]

NYSERDA estimates that if food scraps were recycled or diverted to composting, large food waste generators could reduce costs and greenhouse gas emissions by 175,448 metric tons annually, the equivalent of taking 37,093 cars off the road. NYSERDA also estimates the cost associated with hauling, tipping (dumping), greenhouse gases and the damages from disposing of food wastes from large producers is approximately $41 million annually. If the use of food waste recycling facilities is expanded throughout the state, it could reduce those costs by up to $22 million a year.[11]

---

[3] "Tackling Food Waste at The City Level: The Nashville Food Waste Initiative," NRDC Darby Hoover, March 9, 2016, https://www.nrdc.org/experts/darby-hoover/tackling-food-waste-city-level-nashville-food-waste-initiative.

[4] Ibid.

[5] U.S. Department of Agriculture, Office of the Chief Economist, https://www.usda.gov/oce/foodwaste/faqs.htm.

[6] Biomass Magazine, by NYSERDA, http://biomassmagazine.com/articles/14278/nyserda-ny-food-waste-diversion-could-net-22-million-yearly.

[7] Poon, Linda, "When Food Is Too Good To Waste, College Kids Pick Up The Scraps," NPR, February 27, 2015, https://www.npr.org/sections/thesalt/2015/02/27/389284061/when-food-is-too-good-to-waste-college-kids-pick-up-the-scraps

[8] Strong Food Proposals in 2019 NY Budget, Margaret Brown, NRDC, January 22, 2018. Accessed at https://www.nrdc.org/experts/margaret-brown/strong-food-proposals-2019-ny-budget.

[9] "SUNY Schools are Ensuring Students Stay Nourished and Healthy to Increase Success in College," SUNY, January 2019, https://www.suny.edu/features/food-security/

[10] Governor Cuomo, https://www.governor.ny.gov/sites/governor.ny.gov/files/atoms/files/2017StateoftheStateBook.pdf#page=238.

[11] NYSERDA, "NYSERDA Report Finds Diverting Food Scraps From Landfills Could Produce Net Benefit of up to $22 Million Annually," https://www.nyserda.ny.gov/About/Newsroom/2017-Announcements/2017-03-16-NYSERDA-Diverting-Food-Scraps-From-Landfills-Produce-Net-Benefit-22M-Annually.

A positive step that has been taken by SUNY and CUNY is the implementation of the "No Student Goes Hungry Program," which requires that all SUNY and CUNY schools have a food pantry.[12] In addition to measures like this, colleges and universities should also support on-campus composting and eliminate buffet-style dining halls. Other effective measures include eliminating use of trays.[13]

BAN POLYSTYRENE

Polystyrene is a petroleum-based foam or rigid plastic widely used for takeout food containers, cups and utensils, as well as for packaging peanuts. The product used for on-the-go coffee cups is often called "Styrofoam" after a polystyrene foam product made by Dow Chemical. Polystyrene is not readily biodegradable; at best it will take hundreds of years to decompose in landfills or in the natural environment. Moreover, there is evidence that styrene—classified as "reasonably anticipated to be a human carcinogen"—can migrate from polystyrene directly exposing humans using the products.[14]

This is a huge environmental and fiscal problem, with billions of cups, containers and utensils discarded after a single use and filling our landfills, clogging our sewer systems and migrating to oceans, rivers and lakes.

Countries, states and local governments have begun to take action. Zimbabwe has banned polystyrene food containers. In the U.S. San Francisco, Seattle and Washington, D.C., among other cities, have enacted polystyrene bans. Closer to home, in New York the Villages of Patchogue and East Hampton on Long Island have banned the use of polystyrene.

In 2018, the health, environmental and disposal costs of widespread single use polystyrene products is unacceptable. The Governor and the Legislature should advance legislation to prohibit polystyrene statewide, but until then, college campuses should advance such a policy.

REDUCE SINGLE-USE PLASTIC STRAWS

The planet is drowning in plastic, much of it discarded after a single use. Indeed, a recent study projects that by 2050, there will be almost a billion tons of plastic in the oceans, outweighing the combined weight of all the fish in the oceans.[15] The proliferation of plastic wastes—which take thousands of years

---

[12] "SUNY Schools are Ensuring Students Stay Nourished and Healthy to Increase Success in College," SUNY, January 2019, https://www.suny.edu/features/food-security/

[13] Addiss, Ashby, "How Can College Campuses Reduce Food Waste," Rubicon, September 25, 2017, https://www.rubiconglobal.com/blog/college-food-waste/

[14] *Report on Carcinogens, Fourteenth Edition*, National Toxicology Program, U.S. Department of Health and Human Services (2011). Accessed at https://ntp.niehs.nih.gov/ntp/roc/content/profiles/styrene.pdf.

[15] *By 2050, There Will be More Plastic than Fish in the World's Oceans, Study Says*, Sarah Kaplan, *Washington Post*, January 20, 2016. Accessed at www.washingtonpost.com/news/morning-mix/wp/2016/01/20/by-2050-there-will-be-more-plastic-than-fish-in-the-worlds-oceans-study-says/?utm_term=.0f1f7c203e8e.

to degrade—not only takes a huge economic toll, but a health problem as we humans are consuming plastics in sea fish[16] and sea salt.[17]

The need to reduce and eliminate all single-use plastics is clear, and adopting an "upon-request" policy for plastic straws is a simple and easy method to reduce plastic waste. These may seem like small items, but their impact is large:

- Plastic straws and stirrers were the 7th most commonly found item during the 2017 coastal cleanup.
- Plastic straws cannot be recycled in most places because they are too lightweight.[18] As a result, they can make it harder to recycle other plastics when they contaminate recycling bins.
- When plastic enters the environment, it breaks down into microplastics, which are being discovered in our air and water, and are found in animals and humans; increasingly microplastics are in the food supply. The impact of this on human health is still being researched.

Some people do need straws, particularly persons with medical needs and persons with disabilities. This is addressed by allowing straws to be available upon request, rather than an outright ban. College campuses can adopt such a policy immediately, but this should also be taken on state-wide. This policy has already been adopted in several localities in New York, including the city of Troy and Ulster County.

PROHIBIT THE SALE OF SINGLE-USE WATER BOTTLES

Plastic bottles are consistently one of the most frequently found items of litter in the U.S and across the world. During the 2019 International Coastal Cleanup, plastic beverage bottles were the 5th largest litter item collected.[19] This pattern is also seen in New York.

During Riverkeeper's 2018 Hudson River Sweep, plastic beverage bottles were the third largest type of litter found. The 2018 New York State Beach Cleanup, which had cleanup sites from the shores of Lakes Erie and Ontario to the shores off Long Island, found plastic bottles as the 7th largest type of litter cleaned up – 13,072 plastic bottles were collected. The fifth largest was plastic bottle caps.

There is no need for the sale of single-use water bottles on college campuses. Bottled water is often mistaken as being cleaner than tap, however, that is a misconception. Bottled water is less regulated than

---

[16] *Scientists Launch Groundbreaking Study on Health Risks of Microplastics in Seafood*, Lorraine Chow, *Ecowatch*, May 9, 2018. Accessed at https://www.ecowatch.com/microplastics-seafood-health-risks-2567356961.html.

[17] *Sea Salt Around the World is Contaminated by Plastic, Studies Show*, Jessica Glenza, *The Guardian*, September 8, 2017. Accessed at https://www.theguardian.com/environment/2017/sep/08/sea-salt-around-world-contaminated-by-plastic-studies.

[18] "Understanding Plastic Pollution," For a Strawless Ocean, https://www.strawlessocean.org/faq, accessed June 20, 2019.

[19] "The Beach and Beyond: 2019 Report," The Ocean Conservancy, 2019, https://oceanconservancy.org/wp-content/uploads/2019/09/Final-2019-ICC-Report.pdf

tap water. Additionally, more often than not, bottled water is simply tap water from another region of the U.S that has been bottled for private sale.[20]

Plastic bottles must be eliminated, and single-use water bottles are a good place to start. Students should be encouraged to use reusable water bottles, and water fountains and other refilling stations should be easily accessible and abundant on college campuses.

SUNY New Paltz should be applauded for implementing such a policy back in 2015-16 academic year. The campus now has 36 water bottle refill stations and 28 retrofitted water fountains.[21] College campuses should follow SUNY New Paltz's example and prohibit the sale of single-use water bottles, and New York should consider adopting legislation that would do the same statewide.

LEAD THE FIGHT AGAINST CLIMATE CHANGE

Climate change is widely considered the greatest environmental threat facing the planet. The accumulation of carbon dioxide and other greenhouse gases in the atmosphere is causing climate instability, warmer temperatures, and rising sea-levels. If left unabated, this will likely have devastating impacts on world's economy, infrastructure, public health, coastal areas and natural ecosystems.

According to the United Nations' Intergovernmental Panel on Climate Change (IPCC) October 2018 report, the world needs to limit global warming to 1.5 degrees Celsius, instead of the previously stated 2 degrees, if catastrophic results are to be avoided. Additionally, the world must aggressively move to clean, renewable energy in order to cut global carbon emissions in half by 2030 in order to reach this goal. Limiting global warming to 1.5 degrees Celsius will require rapid, far-reaching and unprecedented changes in all aspects of society.

To align with the IPCC's findings, New York State adopted the Climate Leadership and Community Protection Act (CLCPA) into law in 2019. The CLCPA establishes several goals including:

- 85% reduction in greenhouse gas emissions from 1990 levels, and net-zero emissions, by 2050.
- 70% renewable energy for electricity by 2030, and zero emissions by 2040.
- 6GW of solar by 2025.
- 9GW of offshore wind by 2035.
- 3GW of energy storage by 2030.
- Energy efficiency goal of 185 trillion BTU reduction from 2025 projections.

The adoption of this law comes at a critical time. Scientists have declared 2018 as the fourth hottest year on record and each of the past four years have made up the hottest years on earth since recordkeeping began in the 19th century. July 2019 was declared the hottest month ever recorded.

---

[20] Postman, Andrew, "The Truth About Tap," NRDC, January 5, 2016, https://www.nrdc.org/stories/truth-about-tap?gclid=CjwKCAiA8K7uBRBBEiwACOm4dxxaBbu7pPwuB-atr8buJCcEY1-c5HyDlShdUl0dlidp1MRi8oqqSRoCP74QAvD_BwE

[21] "Bottled Water," SUNY New Paltz, https://www.newpaltz.edu/sustainability/view-programs-and-progress/water/bottled-water/

New York State must move rapidly in order to meet these goals. Colleges and universities in New York State can help New York achieve these goals.

NYPIRG has long advocated for kicking off implementation of climate policies immediately on state-owned facilities and properties. SUNY alone makes up 40% of New York's state-owned facilities.[22] New York can jump-start efforts to meet the state's climate goals by enabling SUNY and CUNY to retrofit their buildings to be more energy efficient, to electrify their buildings, and to invest in more renewables and electric vehicles and EV infrastructure.

SUNY already has some positive policies leading towards this direction through the "SUNY Clean Energy Roadmap."[23] These initiatives should be fast-tracked and considered by private universities as well. At SUNY and CUNY, it is critical that additional capital funding from the State is provided for such efforts.

[22] "Master Capital Plan Report," SUNY, https://suct.suny.edu/sites/default/files/docs/Final%20consolidated%202018%202019%20Master%20Capital%20Plan.pdf
[23] "State University of New York Clean Energy Roadmap," SUNY, 2019, https://www.nypa.gov/-/media/nypa/documents/document-library/cleanenergy/suny-clean-energy-roadmap.pdf

12/16/19

Higher Education Senate Committee
Public Hearing on Capital Funding for Higher Education
December 16, 2019

The City University of New York Testimony

As this nation's largest urban university, with an educational footprint that spans 25 campuses and over half a million students, faculty and staff, The City University of New York (CUNY) takes seriously its responsibility to provide high quality, accessible education and environmental stewardship. We are keenly aware that higher education plays a key role in shaping a sustainable society, not only by preparing our students for careers that address sustainability, but also by example.

Located throughout the five boroughs of New York City, CUNY campuses and facilities are both traditional and innovative. CUNY's building portfolio includes 300 buildings which house classrooms, instructional and research labs, computer centers, theaters, athletic and recreational facilities, academic and administrative offices, and multi-purpose spaces, serving a myriad of needs for both CUNY and the community. Totaling 29 million square feet, these facilities range in age from 1 years old to over 100 years old, with an average age of 50 years.

Capital Renewal: Investment in Existing Facilities

Each year CUNY prepares its five-year capital plan as required by the Educational Law. Given the average age of CUNY facilities, each year CUNY faces the challenge of balancing the need to renovate educational spaces while simultaneously addressing infrastructure needs to both support the educational functions and enhance energy efficiency. This is why a major focus of our current five-year capital request is for renewal funds that keep our aging building infrastructure operating effectively in support of CUNY's educational mission. These capital requests include projects that will:

- Extend the life of CUNY facilities;
- Provide life safety enhancements and meet code requirements;
- Improve operational efficiency, including energy conservation;
- Support academic programs and the University's mission by modernizing spaces for academic, student life, and student services.

CUNY's continued focus on renewal funds means that in the upcoming five-year capital plan, over $500M, or approximately 20%, of the Renewal Funding Requested is for projects that will reduce CUNY's carbon footprint and energy consumption. As with any capital program, having a steady funding stream allows these important capital projects to move in a more consistent, expeditious and efficient manner.

CUNY's capital program and initiatives reflect the University's commitment to sustainable technology and energy efficiency. CUNY is committed to developing a plan to meet the Climate Leadership and Community Protection Act (CLCPA) goals, and is in the process of determining the associated budgetary implications to help us achieve these important targets.

For well over a dozen years, CUNY has been actively working to reduce its carbon footprint and will continue to implement energy conservation strategies while we develop our CLCPA programming. Currently, Sustainable CUNY is significantly expanding its emissions and energy use reduction initiatives by working with our community colleges to create a 5-year comprehensive plan. For instance, the Borough of Manhattan Community College is well on its way, having already achieved a 37% emissions reduction.

Over the past 5 years alone, the CUNY Conserves and the Capital Design and Construction teams have assisted CUNY campuses in their implementation of over 370 energy efficiency projects, ranging from upgrading building automation systems to efficient lighting controls. A current example is the Real Time Energy Management Program. With the installation of energy data monitors throughout CUNY campuses, campus facility departments are now able to both operate more efficiently and reduce emissions, and participate in critical demand response programs, to continuously monitor and improve campus operations in connection with energy efficiency. The CUNY Conserves team is also working on equipment inventories for each college and analyzing data that will result in improved preventative maintenance protocols, which will result in reductions of both emissions and annual energy costs for individual colleges. These examples, along with numerous other projects both in process and in planning, will serve as the initial CLCPA program implementation efforts.

A key component of the ongoing efforts to improve energy efficiency at CUNY has been a decade long focus on retro-commissioning within our aged building stock. Retro-commissioning is a process to improve the efficiency of an existing building's equipment and systems. For example, retro-commissioning of a building's HVAC system would include:

- Investigating and identifying deficiencies in a current HVAC control system
- Defining the required improvement of building automation systems and optimization measures to be incorporated into upgrade work, and

- Developing construction documents showing existing equipment targeted for improvement, defining specific work tasks to be performed on each piece of equipment.

Furthermore, CUNY is currently investing over $340M in dozens of "Energy Performance" capital projects on 15 campuses that will significantly reduce emissions. They include the replacement of the chillers, boilers, HVAC, and control systems at The New York City College of Technology, the centralization of the chiller plant at Queens College, and upgrades to the HVAC systems at The City College of New York. CUNY is undertaking many new energy performance projects with state-of-the-art heating, ventilation, air conditioning and refrigeration technology to promote sustainability.

Finally, since 2005, all new buildings at CUNY have been design and constructed with a strong focus on sustainability and efficiency. CUNY has made the commitment that all new CUNY buildings and major renovations will achieve a minimum of LEED-certified Silver or its equivalent. Hence, the seven new buildings completed by the CUNY Capital Program in the last decade have achieved LEED certifications ranging from Silver to Platinum. Notable achievements include, Lehman College's 69,000 square foot Science Hall in the Bronx, which achieved a LEED Platinum Certification in 2013, and The New York City College of Technology's 350,000 square foot Academic Complex in Brooklyn, which achieved a LEED Gold Certification in 2018. Both buildings are shining examples of providing CUNY students with state-of-the-art, sustainable learning environments in STEM disciplines.

With a consistent and predictable funding, CUNY can plan for and implement other energy performance projects that will, continue to replace traditional, inefficient building technologies, equipment and materials with newer, sustainable building technologies, equipment and materials. For example, future projects could include updating of windows, installation of green and solar roofs, and updating chillers, BMS systems, HVAC and controls to retrofit our buildings to be more energy efficient and sustainable. Each project will serve to decrease our carbon footprint and help the State achieve its climate-change goals, which can only be achieved through consistent and predictable investment in the CUNY capital plan.

Thanks to the members of the Higher Education Senate Committee for providing CUNY with the opportunity to provide this testimony.