New Jersey Board of Public Utilities
Clean Energy Incentive Program

Opportunities for Commercial, Industrial and Institutional Buildings

ANJEC-ACE Workshop

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NJ Clean Energy Program Background

- Introduced in 2001 as part of the 1999 EDECA
- Funded from “Societal Benefits Charge” on utility bill
- Administered by the New Jersey Board of Public Utilities
- Provides energy efficiency project opportunities for:
  - Residential
  - Renewables
  - Commercial & Industrial

Commercial & Industrial Portfolio

- NJ SmartStart Buildings
- Local Government Energy Audit
- Direct Install
- Pay for Performance
- Combined Heat & Power/Fuel Cells
- Benchmarking

Free Benchmarking Report

Benchmarking assessments are designed to help:

- Understand energy cost trends and consumption at each building
- With sufficient comparative data, see how building(s) compare to similar buildings using EPA Portfolio Manager
- Identify relevant incentives for energy efficiency projects
- The benchmarking report is valued at $1,500

NJ SmartStart Buildings

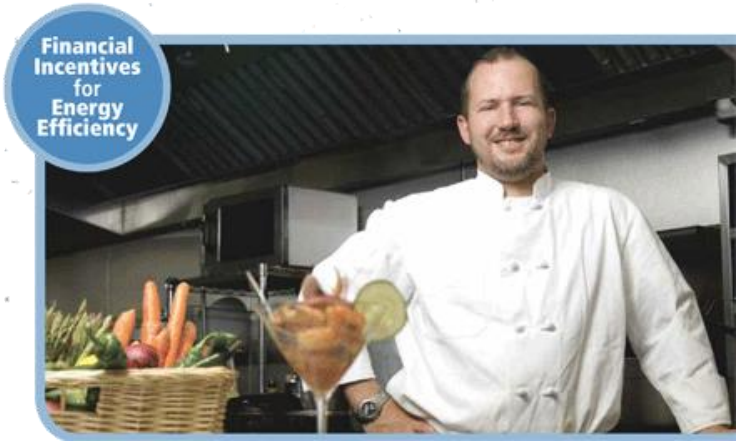
Prescriptive Incentives – Prequalified Technologies

- Electric Chillers
- Natural Gas Cooling
- Electric Unitary HVAC Systems & Controls
- Ground Source Heat Pumps
- Gas Heating
- Water Heating
- Lighting Controls
- Variable Frequency Drives VAV Systems or ChW Pumps
- NEMA Premium Motors*
- Prescriptive & Performance Lighting*
- Refrigeration Doors/Covers and Controls
- Food Service Equipment

***Incentives for premium motors and T12 lighting are discontinued as of March 1, 2013, except in Hurricane Sandy areas where the date has been extended to June 30, 2013.**

Food Services Grouping

A new line of Prescriptive Buildings incentives has been added for high efficiency food service equipment, including:



- Dishwashers
- Fryers
- Griddles
- Hot Food Holding Cabinets
- Ice Machines
- Ovens
- Refrigerators & Freezers
- Steam Cookers

The 50% enhancement for areas impacted by Sandy does not apply to the new food service equipment incentives.

Local Government Energy Audit

The Audit is available for:

- NJ Local Governments
- 501(c)(3) Non-profit Agencies
- NJ State Colleges and Universities
- K-12 Schools

Covering a wide range of building types, including:

- Offices
- Town Halls
- Police and Fire Stations
- Courtrooms
- Community Centers
- School Buildings

Local Government Energy Audit

- Participants select from a list of pre-qualified auditing firms who follow strict parameters to analyze the buildings and prepare the audit report
- The program **subsidizes 100%** of the audit cost, subject to an annual $100,000 incentive cap per entity
- Audit generates a list of recommended, cost-effective energy efficiency measures and facility upgrades to reduce operating expenses
- Many of the recommended measures are eligible for additional incentives offered by New Jersey's Clean Energy Program

Direct Install

- A turn-key, retrofit program designed to address the replacement of lighting, HVAC and other outdated operational equipment in small to medium size facilities with a peak electric demand not exceeding 200 kW in the preceding 12 months
- Provides incentives of up to 70% of the installed cost
- Incentives are paid directly to the contractor
  - customer pays remaining 30%
  - $125,000 project cap
  - $250,000 per entity cap

Woodbridge Library

- 52,000 sq.ft. Building
- Lighting Retrofit & Controls
  - Incandescents to Screw-in CFLs
  - Fluorescents to T-8s & LED Exit Signs
  - Occupancy Sensors
- Total Project Cost $100,148
- Direct Install Incentive $50,000 (Capped)
- Customer Share of Cost $50,148
- Annual Savings
  - 260,260 kWh
  - $39,149
- Payback Period – 1.28 Years

Ocean City Police

- Three Story Police Department Building
- Lighting & HVAC Retrofit & Controls
  - 4 lamp to 2 lamp T-8s, Occ Sensors
  - Ten 15-26 Year Old ACs
  - Four 30 Year Old Gas Furnaces
  - Faucet Aerators for Gas Water Heating
- Total Project Cost $106,550
- Direct Install Incentive $50,000 (Capped)
- Customer Share of Cost $56,550
- Annual Savings
  - 43,603 kWh, 3,198 Therms
  - $11,595
- Payback Period – 4.88 Years

Pay for Performance

- Comprehensive, whole-building approach to saving energy in existing or new facilities
- Goal is to reduce facility energy consumption by 15% or more, or 4% for eligible high-energy intensity customers
- Relies on a network of program partners who provide technical services under direct contract to customer

Pay for Performance Incentives

- Incentives up to **$2 million per project**, assuming both gas and electric improvements are made; $4 million annual entity cap
- Incentives paid out in three installments at program milestones:
  1. Completion of comprehensive energy study ("Energy Reduction Plan")
  2. Installation completion of recommended measures
  3. End of 12-month energy savings verification period

Wyckoff Public Schools

- Eisenhower Middle School, Lincoln, Coolidge, Washington Elementary Schools
- Energy Efficiency Measures:
  - T-12s to T-8s
  - Lighting Occupancy Sensors
  - Stream Trap Replacements
  - Building Automation Systems
- Project Cost $1,189,879
- Incentives $201,448 (integrated with ESIP)
- Annual Savings
  - 474,274 kWh, 34,840 Therms, $138,417
- Payback Period – 7 Years

Saker ShopRite

- 91,707 sq.ft. Supermarket
- Energy Efficiency Measures:
  - T-12s to T-8s, LED Retail Display
  - Compressor Upgrade, New Condensers
  - Radiant Floor Heat Recovery
  - Additional Wall & Roof Insulation
  - Reach-in Refrigerators/Freezers with LED Lights and ECM Motors, Controls
  - High Efficiency RTUs
- Project Cost $1,201,830
- Incentives $329,205
- Annual Savings
  - 1,354,812 kWh, 8,790 Therms, $186,886
- Payback Period – Less Than 5 Years

Genesis Healthcare Voorhees Center

- 67,079 sq.ft. Nursing Home
- Energy Efficiency Measures:
  - T-12s to T-8s
  - VFD Kitchen Hood Controls
  - High Efficiency Space Heating
  - High Efficiency Water Heating Boilers
- Project Cost $314,074
- Incentives $72,140
- Annual Savings
  - 157,612 kWh, Therms 20,590, $47,601
- Payback Period – 5 Years

New Jersey's Clean Energy Program
Combined Heat & Power and Fuel Cells

NJ CHP Policy – for Critical Facilities

CHP more than just an emergency measure - operates 24/7

Can generate a portion/all of the facilities energy needs including electric and thermal

What is needed for CHP for Critical Facilities

- Operate isolated from the grid – Islanding
- Undergrounding of wires
- Blackstart - (Code issues)
- Testing
- Training

Distributed Generation (DG)

- **DG is….**
  - **An Electric Generator**
  - **Located at a Substation or Near a Building/Facility**
  - **Generates at least a portion of the Electric Load**

- **DG Technologies…**
  - **Solar Photovoltaic**
  - **Wind Turbines**
  - **Engine Generator Sets**
  - **Turbine Generator Sets**
    - **Combustion Turbines**
    - **Micro-turbines**
    - **Steam Turbines**
  - **Fuel Cells**
    - **Solid Oxide**
    - **Molten Carbonate**
    - **Phosphoric Acid**
    - **Protein Exchange Membrane (PEM)**

Your facility is a good candidate for CHP if…

- You pay more than $.07/ kilowatt-hours on average for electricity (including generation, transmission, and distribution)
- Your facility is located in a deregulated electricity market
- Your facility operates for more than 5,000 hours/year
- You have thermal loads throughout the year (including steam, hot water, chilled water, hot air, etc.) Does your facility have an existing central plant?
- You anticipate a facility expansion or new construction project within the next 3-5 years
- You have already implemented energy efficiency measures and still have high energy costs

The Markets for CHP

Strong Candidates

- Healthcare (hospitals and long term care facilities)
- Industrial and Manufacturing
- Hotels/Lodging
- Data Centers
- College and Universities (campus settings)
- Multi-Family Housing

Potential Candidates

- Commercial Office Buildings
- K-12 Education Facilities
- Government and municipal facilities
- Retail Establishments
- Health Clubs

Combined Heat & Power/ Fuel Cells- Small Scale program

All system size limited to 1 MW or less

Non-RE Fuel < 500 kW $1000/kw > 500 kW $500/kW
$250/kw bonus w PfP capped at 30% or 40% with cooling

RE Fuel < 500 kW $3000/kw > 500 kW $2000/kW
Capped at 40%

Fuel cells HR $2000/kW
Fuel cells w/o HR $1500/kW
$250/kW bonus w Pay 4Proformance capped at 60%

Sample Calculation

600 kW Nat Gas Engine w/heat recovery and absorption cooling

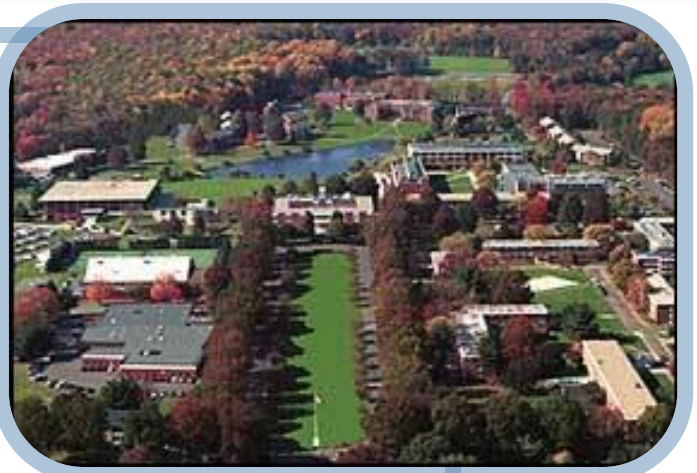
- Total Installed Cost = $1,200,000
- Requested Incentive - 600,000 x $1.00/Watt = $600,000
- Incentive Cap - $1,200,000 x .40 = $480,000
- Final Incentive - $480,000

NJ CHP Policy – storm Response

- Power was out in Princeton for over a week but Princeton University was able to switch off grid and power a large part of the campus with an 11 MW CHP unit

- The College of NJ was able to island their facilities because of their CHP units and continue to stay open while the 26kV line that feeds power to the campus was down and was being repaired

Rider University



- 280 acre college campus
- Combined Heat and Power (CHP)
  - 1,100 kW internal combustion engine with recovery
  - 80-ton absorption chiller
- Project Cost $4,594,188 (estimated)
- Incentives $1,000,000
- Annual Savings 8,545,053 kWh generation, 21,029 MMBtu recovered waste heat to provide 47% of campus electric load, 76% heating and hot water load, and 23% cooling load
- **Annual Cost Savings $527,973**
- Payback Period 6.8 Years
- Manufacturing and construction anticipated to generate 25 temporary full-time jobs

Funding

Energy Savings
Improvement Program

Aka: **ESIP**

P.L. 2009 c 4 P.L 2012 c 55

What ESIP is all about

- Retrofitting public facilities with Energy Conservation Measures (ECM's) without new capital investment
  - Savings from reduced energy used pays for the improvements.
  - Simply stated NO NEW MONEY!

- Applies to all government contracting units, including municipal facilities, fire districts, MUA's and school districts.

ECM Categories

- Distributed Generation (solar, wind, geothermal, bio)
- Major HVAC (capital) and minor HVAC (non-capital)
- Energy efficiency, demand response equipment
- Non-energy savings related (building envelope)
- Future capital replacements
- Standalone lighting improvements
- New energy related capital improvements, i.e, new AC installation must be funded separately from non-operating (i.e., capital improvement) funds.
- Water savings, i.e., low flow fixtures

Contracting Options Available

Plan A – ESCO Option

- ESCO is a single contractor that develops & manages the process, including offering guaranteed savings.
- Use public bidding or competitive contracting process to award a contract to a firm (ESCO) to develop & manage construction of improvements
- Contract award is for "most advantageous, price and other factors considered process" or "lowest responsible bidder."

Do-It-Yourself

Plan B – DIY Model

- Hire an energy consultant to develop your Energy Savings Plan
- Develop your own specs and bid the job…
  - Or hire professionals to provide that service

- Rely on built-in verification process to assure savings

Hybrid Model

Plan C – Hybrid Model – Combination of ESCO & DIY

- Hire an Architect or Mechanical Engineer to manage an ESCO project
- Develop a plan that the professional will put out to bid as a RFP
- Allow the professional to take the entity (gov't or school) through the interview process
- Allow the professional to be the liaison through the project to the ESCO

Develop the ESIP

Step 1 – Develop RFP for ESCO's with an existing energy audit (LGEA or independent)

Step 2 – Hire ESCO or manager to prepare Energy Savings Plan

- If competitive process, use the audit as basis for proposals
- ESCO must agree to provide an optional energy savings guarantee

Step 3 – Develop Energy Savings Plan

- Identify the Energy Conservation Measures and projected energy savings with an Investment Grade Audit (IGA)
- Savings based on BPU adopted standards
- Plan must be approved by the BPU

ESIP is a Funding Program

Requirements for an Energy Savings Plan

- No Negative Cash Flow
- No Capital Cost Avoidance
- No use of SREC's in Cost Savings Calculations
- Independent Third Party Review of Plan
- Maximum 15 Year Pay Back Standard Plan
- Maximum 20 Year Back with Combined Heat & Power Plan

BPU Jurisdiction of ESIP

Guidelines – The Final Word

- RFP must be approved by the BPU
- Mandatory pre-proposal conference for interested, DPMC certified ESCO's
- BPU will receive, at a minimum, a CD copy of each phase of the proposal and contract process
- Investment Grade Audit (IGA) for the Energy Savings Plan
- After Independent Third Party Review of Plan, BPU must approve plan
- BPU has complete authority to deny any phase and Clean Energy Incentives when deemed necessary

Getting Started

Start with an Energy Audit:
http://www.njcleanenergy.com/commercial-industrial/programs/local-government-energy-audit/local-government-energy-audit

Issue a RFP for a Energy Cost Savings Plan: Boiler Plate Available
http://www.njcleanenergy.com/commercial-industrial/programs/energy-savings-improvement-program

Contract Issued
Work Begins
Energy Costs Drop
Savings Begin

For More Information

Visit: NJCleanEnergy.com

Call (866) NJSMART

For the latest updates on program announcements or new incentives, subscribe to the NJ Clean Energy E-Newsletter at NJCleanEnergy.com

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