

Commercial & Industrial Energy Efficiency Incentive Program



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NJ Clean Energy Program

- Introduced 2001 Part of the NJ “Clean Energy Act” of 1999.
- Funded from “**Societal Benefits Charge**” on Utility bill.
- Funding is for **Commercial & Industrial**, Residential, & Renewable Energy Projects - **New Construction or Building Retrofits**.
- New construction projects must be in State designated **Smart Growth** (NJHMFA Website) areas to be eligible for incentives. K-12 Public Schools, Municipally-Owned Buildings, Hospitals, & Military Facilities are EXEMPT!



COMMERCIAL & INDUSTRIAL RATEPAYERS IN “PUBLIC” UTILITY AREAS

ARE ENTITLED TO:

\$200,000 ON THE ELECTRIC SIDE

\$200,000 ON THE GAS SIDE

Why Energy-Efficiency Programs?

Energy-efficiency programs are designed to:

- Save energy and money by reducing the demand for energy
- Protect the environment
 - Less emissions
 - Cleaner air
- **Transform** the Market Place
 - change behaviors - think high efficiency first!
 - encourage early older equipment retirement
 - encourage renewable energy

“IF IT AIN’T BROKE(N) DON’T FIX IT!”

RIGHT?

**FOR JUST ABOUT EVERYTHING ELSE THAT
STATEMENT MAY BE TRUE.....**

**FOR OLDER BUILDING EQUIPMENT?
ABSOLUTELY NOT TRUE!!**



TODAY'S “**HIGHER**” EFFICIENCIES

IN THE LAST 5-10 YEARS - THE EFFICIENCIES OF BUILDING EQUIPMENT HAVE MADE GREAT TECHNOLOGICAL STRIDES.

HIGH EFFICIENCIES - COUPLED WITH NJSSB'S **MONETARY INCENTIVES** – PAYBACK PERIODS ARE GENERALLY “VERY GOOD” (3 YRS) TO “EXCELLENT” (MONTHS)!!

LONG TERM SAVINGS – MAY BE IN THE TENS OF THOUSANDS OF DOLLARS....PROFIT!



!FIRST THINGS FIRST!
TAKE CARE OF YOUR BLDG FIRST
BEFORE ADDRESSING SOLAR ENERGY

ADDRESS THE:

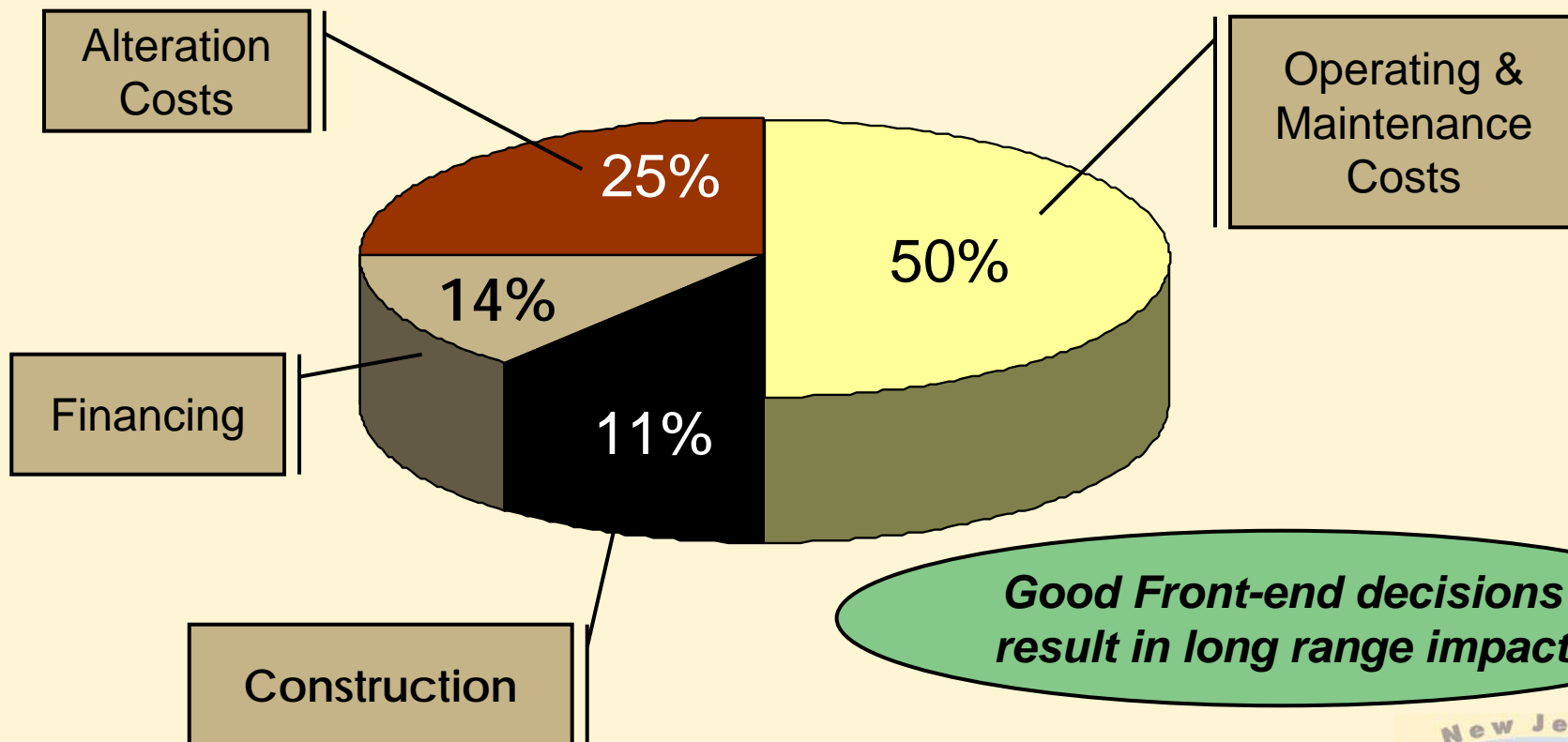
“THE LOW HANGING FRUIT”

- A) INSULATION, AIR SEALING, WINDOWS**
- B) LIGHTING**
- C) HVAC / VFD'S / WATERHEATING**
- D) MOTORS**



OWNERSHIP COST SUMMARY

(per ASHRAE 40-year building life cycle)



Good Front-end decisions result in long range impact



Incentives Available For:

- **Design Assistance Grants** [...more](#)
- **Pre-Qualified Equipment** [...more](#)
- **Custom Measures with energy-saving potential** [..more](#)
- **Cost-sharing for Studies & Commissioning** [... more](#)
- **Combined Heat & Power** ... [more](#)

New Incentives for 2008:

- **Municipal/Local Government Audit Program** [...more](#)
- **Direct Install Pilot Program** [...more](#)
- **Pay For Performance Pilot Program** [... more](#)
- **School Energy Education Pilot Program** [..more](#)

Long-term Operating Savings

- **Follow the Rules!!** [... go](#)



Design Assistance Grants

For Facilities of Minimum of 50,000 Sq Ft
OR HVAC > 150 tons and Demand > 75kW

Comprehensive Design Support

At conceptual design stage of construction project

- Brainstorming: \$1,000 grant
- Energy Modeling: \$5000 for 50K / sf, then \$.03 / sf for each additional sq ft
- Incremental Design Incentive: Up to \$5,000

Modified Design Support

Design substantially complete, but before bidding

- Goal to re-consider energy saving potential
- Up to \$5,000 on case-by-case basis



Pre-approved Technologies

- Electric Chillers (\$8 to \$170 / ton) [...more](#)
- Natural Gas Cooling [... more](#) (\$185 to \$450 / ton)
- Electric Unitary HVAC Systems (\$40 to \$92 / ton) [... more](#)
- Ground Source Heat Pumps (\$370/ton) [... more](#)
- Gas Heating (\$300 minimum / furnace or boiler) & DHW Heating (\$50 minimum / heater) [... more](#)
- Variable Frequency Drives [... more](#)
VAV Systems or ChW Pumps (\$60 to \$155 / HP)
- NEMA Premium Motors - 1 to 200 hp (\$45 to \$700 / motor) [... more](#)
- Prescriptive & Performance Lighting (\$10 to \$284 / fixture) [... more](#)
- LED Traffic Signal Lamps (retro-fit) (\$20 for 8" and \$35 for 12" lamps)
- Lighting Controls (\$20 to \$75 / unit) [... more](#)

Chiller Incentive Range

Type	Size (tons)	Max kW/ton	Incentive Range per ton
Air-cooled	≤ 150	1.20	\$14 - \$52
	> 150		\$8 - \$46
Water-cooled	< 70	0.75	\$16 - \$54
	$70 < 150$	0.75	\$25 - \$60
	$150 < 300$	0.62	\$16 - 141
	≥ 300	0.53	\$12 - \$170

Notes:

1. May qualify under full load or partial (PLV) kW / ton, but not both.
2. Incentive for chillers with factory-installed VFD to be calculated at the appropriate PLV kW / ton - No extra incentive for VFD.
3. Appropriate ARI data must be supplied with application.

Natural Gas Cooling

Gas Absorption Chillers (based on full or part load COP)		
Size (tons)	Indirect-fired	Direct-fired
< 100	≥ 1.1 COP \$450 / ton	≥ 1.1 COP \$450 / ton
100 to 400	≥ 1.1 COP \$230 / ton	≥ 1.1 COP \$230 / ton
> 400 (only 2-stage)	≥ 1.1 COP \$185 / ton	≥ 1.1 COP \$185 / ton
Regenerative Desiccant Units		
Based on Process Airflow	Eligible when matched with core gas or electric cooling equipment. Incentive is \$1.00 per CFM	
Gas Engine-driven Chillers – Custom Measure with efficiency levels and incentives determined on a “case-by-case” basis		

Electric Unitary HVAC Incentive Summary

Capacity (tons)	Unitary/Split Air Conditioners and Heat Pumps *	
	Minimum Qualifying Efficiency	Incentive Amount
< 5.4	14.0 SEER	\$92 / ton
>= 5.4 to 11.25	11.5 EER	\$73 / ton
>=11.25 to 20	11.5 EER	\$79 / ton
>= 20 to 30	10.5 EER	\$79 / ton
Packaged Terminal Systems (PTAC's)		
< 0.75	12.0 EER	\$65 / ton
0.75 to 1.0	11.0 EER	\$65 / ton
> 1.0	10.0 EER	\$65 / ton
Water Source Heat Pumps		
All Capacities	14.0 EER	\$81 / ton
Central DX Air Conditioning Systems		
> 30 to 63	9.5 EER	\$40 / ton
> 63	9.5 EER	\$72 / ton

* Note: Dual Enthalpy Economizer Controls Incentive: \$250 per unit

Ground Source Heat Pump Systems

- Environmentally friendly and high-efficient way to heat and cool
- Uses thermal reserve of earth to exchange BTU's with the building
- Energy Star rated equipment only

Ground source heat pumps	
Open Loop	16.0 EER (min) \$370 per ton
Closed Loop	

Natural Gas Space & DHW Heating

Gas-Fired Boilers		
Capacity	Minimum Efficiency	Incentive
< 300 MBH	85% AFUE	\$2 per MBH \$300 min
>300 MBH	Varies based on unit size & whether it produces hot water or steam - see web site (\$1.00 -1.75 per MBH)	
Gas Furnaces		
All Sizes	90% or better AFUE	\$300 per furnace
Gas Water Heaters		
<= 50 gal.	0.62 or better energy factor	\$50 per heater
> 50 gal to 4000 MBH	Minimum efficiency and incentive varies based on unit capacity - see web site (\$1.00 – 2.00 per MBH)	
Gas-Fired Water Booster Heaters		
<= 100 MBH	\$35 per MBH	
> 100 MBH	\$17 per MBH	

Variable Frequency Drives

Centrifugal Fan Applications in Variable Air Volume HVAC Systems	
Controlled Motor HP	Incentive per total HP controlled: <u>retro-fit only</u>
5 < 10	\$155
10 < 20	\$120
>20	\$65
Chilled Water Pump Motors for HVAC Systems	
>= 20 HP	\$60 per VFD rated HP
All other VFD applications must be submitted under Custom Measures with incentives determined on a case-by-case basis	

Notes:

- VFD must have an input line reactor or isolation transformer.
- VFD must be installed in a system with pressure sensors (or other applicable sensor devices) in the flow stream.

Variable Frequency Drives (cont'd)

Rotary Screw Air Compressors (for new compressors outfitted with VFDs, providing compressed air for typical plant use)

25 to 29 HP -----	\$5,250
30 to 39 HP -----	\$6,000
40 to 49 HP -----	\$7,200
50 to 59 HP -----	\$8,000
60 to 199 HP -----	\$9,000
200 to 249 HP -----	\$10,000
>= 250 HP -----	\$12,500

Retrofit of VFD to existing air compressor may qualify as a custom measure

One VFD compressor eligible per system, operating 2000 hr / yr (min)



NEMA Premium Motors

Three-phase motors

- Can consume 60% of a production facility's electrical resources
- Account for up to 50% of a commercial facility's HVAC electrical load

NEMA Premium motors have paybacks from six months to three years!

Qualification for Incentives

- ✓ 1 to 200 HP, 3-phase, 1200, 1800 or 3600 rpm, ODP or TEFC
- ✓ Operate a minimum of 2,000 hrs / year
- ✓ Meet "**NEMA Premium**" qualifying efficiencies
- ✓ Incentives from \$45 to \$700
- ✓ > 200 HP, submit as Custom Project

Prescriptive Lighting Incentives - for Existing Facilities

Replacement of T-12, HID, or Incandescent fixtures with T-5 or T-8 fixtures:	Wattage of replaced fixture	Type of new fixture	Incentive
HID, T-12, Incandescent	>= 1000 watts	T-5, T-8	\$284
HID, T-12, Incandescent	400 to 999 watts	T-5, T-8	\$100
HID, T-12, Incandescent	250 to 399 watts	T-5, T-8	\$50
HID only	175 to 249 watts	T-5, T-8	\$43
HID only	100 to 174 watts	T-5, T-8	\$30
HID only	75 to 99 watts	T-5, T-8	\$16
T-12 only	< 250 watts	T-5, T-8 (1 & 2 lamp)	\$25
T-12 only	< 250 watts	T-5, T-8 (3 & 4 lamp)	\$30
Retrofit of T-12 fixtures to T-8 fixtures with electronic ballasts	New ballasts and lamps	1 & 2 lamp retro-fit	\$10 per fixture
		3 & 4 lamp retro-fit	\$20 per fixture
Retrofit of T-8 fixtures by permanent de-lamping and new reflectors	N/A	N/A	\$20 per fixture



Prescriptive Lighting Incentives - For Existing Facilities

<u>Type of Fixture</u>	<u>Requirement</u>	<u>Incentive</u>
LED Exit Signs	> 75 kW Load (12 month average meter load)	\$ 10 per new fixture
LED Exit Signs	<= 75 kW Load (12 month average meter load)	\$ 20 per new fixture
Compact Fluorescent (New Fixtures only)	Hard wired and replacing incandescent lamps	\$ 25 for 1 lamp \$ 30 for 2 lamp
Pulse Start Metal Halide	> 150 watts (Including Parking Lots)	\$ 45 per fixture
LED	Low Bay Parking Lot	\$ 43 per fixture
New Construction or Complete Renovation	N/A	Performance Based Only



Performance Lighting Incentives

Technology & Qualifiers	Reference Base-line	Incentive Hurdle	Incentive
New construction and major renovation	ASHRAE Energy Standard 90.1 – 2004	20% more eff than baseline UPD (watts/sf)	\$1/watt/sf reduced below hurdle

- Incentives up to \$30.00 per fixture
- Light levels must comply with non-residential NJ codes (e.g. schools).
- Refer to the ASHRAE 90.1-2004 tables for Unit Power Density (UPD) baselines for various areas (each area must be evaluated independently).
- Apply for incentive by completing a Performance Lighting Worksheet and Application.

Lighting Control Incentives

Fixtures controlled to comply with Prescriptive Lighting incentive requirements

Types of Controls	Fixtures < 14 ft high	Fixtures >= 14 ft high
Occupancy Sensor – On/Off*	\$20/control**	NA
Wall-mounted		
Remote-mounted	\$35/control**	
Daylight Dimming (Adjusts for natural lighting)	\$25/fixture controlled	\$75/fixture controlled
Occupancy Sensor – Hi/Lo with Step Ballast***	\$25/fixture controlled	\$75/fixture controlled

* Must control 2 or more fixtures & can't have manual override to the "ON" position

** Existing facilities only *** Space must be at least 250 square feet



Custom Electric Projects

Opportunities for non-pre-qualified technologies

- Submit Custom Electric Equipment application and technical study estimating:
 - Savings over established “base-line”, for example, 20 kW minimum demand reduction or 25,000 kWh saved per year
 - Life-cycle costs vs. life-cycle savings
- If project qualifies:

Incentive of up to 80% of incremental cost of equipment above the baseline or a two year pay-back, whichever is less



Custom Gas Projects

Opportunities for non-pre-qualified technologies

Submit Custom Gas Equipment application and technical study proposal

- Market Manager must review & provide conditional approval for each proposal prior to commencement of technical study
- No minimum natural gas savings threshold required

If project qualifies:

Incentive of up to 80% of incremental cost of equipment above the baseline or a two year pay-back, whichever is less

School Energy Education Program (Draft)

- **K – 12 Public Schools.**
- **Approx 100 Schools to be Selected by State of NJ based on building characteristics.**
- **Requires 24 months of energy consumption data to serve as baseline. Schools will be encouraged to use newer efficient technology to save energy.**
- **Percentage of energy savings returned to the Schools for development of energy efficiency educational programs for faculty & students.**

Municipal / Local Government Agency Audit (Draft)

- **Agency requests proposal for an energy audit from contractor on approved NJ Dept of Treasury list.**
- **Agency pays 25% of audit fee - if recommended upgrades are installed, the 25% fee is refunded to Agency.**
- **The participating Agency is eligible for upgrade equipment installation through the Direct Install Program or the standard SmartStart Program.**

Direct Install (Draft)

- **Retro-fit Program for customers with an average “peak” demand of “less” than 100 kW.**
- **Provides a pre-qualified list of contractors for direct installation Incentives and education to encourage “early replacement” of eligible equipment.**
- **Qualifying customers are eligible for incentives up to 80% of the installed cost!**

Pay For Performance (Draft)

- **For customers with average peak demand of “more” than 100 kW per year.**
- **Whole Building Approach to EE- Incentives are linked directly to energy savings with approximately “20% reduction” of Energy Usage as the minimum goal based on a building simulation analysis.**
- **Incentive payments are made upon equipment system: A) design, B) installation, and C) verification.**
- **Incentives range from \$5K to \$50K.**

Other Ways to Participate

- **Multiple Measures Bonus (up to 10 %)**
 - For NEW construction: Lighting plus other measures are required
 - For RETRO-FIT, if lighting has already been upgraded: Any two or more energy saving measures qualify.
 - Total for the year cannot exceed the \$200K Cap
- **Building Commissioning (CX)**
 - For K-12 public schools ONLY (at least 50,000 s.f. in area)
 - Must follow Comprehensive Design Path or Equivalent
 - 50% of Commissioning Agent fee to \$30,000 maximum
- **Chiller Plant Optimization Studies**
 - When deciding to upgrade or replace chillers (500 tons min.)
 - Study grants to \$10,000 (on 50/50 cost sharing basis)



More Ways to Participate

- **Compressed Air Optimization Studies**
 - Typically improve system operating efficiency 20 - 50%
 - 50/50 cost share up to \$7,500 to audit systems \geq 100 hp
- **Small Commercial & Industrial Customers**
 - Small customer prescriptive lighting path (\leq 75kW)
 - Facility onsite meeting (Building Walkthrough) and application assistance provided by Market Manager

Combined Heat and Power

(Capped at \$1 million per project)

Goals:

- Enhance energy efficiency through on-site power generation with recovery and productive use of waste heat, while reducing peak demand on the electric power grid
- Encourage the use of emerging technologies

Restriction:

- Any portion of the customer's load that is committed to an interruptible or peak load reduction program is not eligible for incentives.



Combined Heat & Power Incentives (2008)

Eligible Technology (min 60% annual eff)	Incentives (\$/W) (\$1million max)	Maximum percent of project cost
Level 1: fuel cells not fueled by class I renewable fuels	\$4.00 per Watt	60%
Level 2: Micro- turbines, I/C engines, gas turbines	\$1.00 per Watt	30% (40% where a cooling application is used with CHP sys)
Level 3: Heat recovery or other mechanical recovery from electric generation equipment	\$0.50 per Watt	30%

Note: All systems, except for fuel cell stacks, must be covered by a 5-year warranty or service contract

... [back](#)



NJ SmartStart Buildings Rules

www.njsmartstartbuildings.com

You must receive an **Approval Letter** prior to purchase:

- NOT REQUIRED when incentives < \$5,000 for HVAC or motors
- REQUIRED for all other Energy-Efficiency Measures (EEMs)

Apply Before you buy !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!

Send to TRC Energy Services (Market Manager):

Registration, Application(s), Worksheet(s), Tax Clearance Certificate,

W-9 Form, Copies of latest Utility Bills and

- Equipment Manufacturers' Technical Data Sheets

3. **Install** EEMs in accordance with the “**approval letter**” within the specified time frame.



NJ SmartStart Rules (continued)

4. Submit “proof-of-purchase” (invoice) documentation and the incentive will be **the lesser of:**
 - The approved program incentive amount
 - The actual cost of equipment for the energy-efficient measure
5. Allow 60 days for delivery of incentive after submission of all required documentation.

Note: the NJBPU reserves the right to cap incentives at \$200,000 per utility account per calendar year.



Typical Program Project Commitment Periods

- A/C & Heat Pumps ----- 6 Months
- VFDs & Motors ----- 6 Months
- Chillers ----- 8 Months
- Performance Lighting ---- 6 Months
- Prescriptive Lighting ----- 3 Months
- Custom Measures ----- Case by case
- Gut-Rehab Renovation -- 12 Months
- New Construction ----- 18 Months



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