

The 123 of CHP Grants and Financing

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Highlights

- Project Costs
- Incentives
- Project Financing Mechanisms
 - Traditional / Debt Finance
 - Energy Savings Improvement Program (ESIP)
 - Public Private Partnership



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Simplified CapEx Components

Digester CHP Sample CapEx
Engineering Design
CHP Equipment - Engines, Heat Recovery, Emissions, etc.
Digester Gas Conditioning
Electrical SwitchGear
Other Equipment
Permitting / Interconnections
Construction / CHP / Distribution Pipelines / Building(s)
Project Management
Risk Management & Insurance
Contingency
Miscellaneous
Total Capital Expenditures

Range of Project Cost (Digester CHP): \$3,000-6,000/kW



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Simplified OpEx

Operations

- FTE operators
- Back office staff
- Compensation and benefits
- Overtime
- Insurance

Maintenance

- Repairs & maintenance
- Vendor service agreements
- EH&S Compliance
- Consumables
- Parts inventory



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Incentives

- Incentives reduce capital costs and improve the project's financial metrics
 - Lower payback period
 - Improved IRR
- Where can we get free/cheap money?
 - Grants
 - NJ Clean Energy Program
 - NJ EDA Large Scale CHP Program
 - Tax credits, accelerated depreciation, etc.



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NJ Incentive Grant Programs

for CHP fueled with Class 1 Renewables (E.g. Digester Gas)

	NJ Clean Energy C&I	NJEDA Large Scale CHP
<.5MW	\$3/watt	
.5 to 1MW	\$2/watt	
1MW to 3 MW		\$0.55/watt
>3 MW		\$0.35/watt
Max Grant	\$2,000,000	\$3,000,000
Max % project cost	40%	30%
Examples:		
1MW @ \$5M	\$2M grant	\$1.1M grant
2MW @ \$8M		\$1.75M grant
5MW @ \$17.5M		

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- ### Federal Tax Incentives
- Investment Tax Credit
 - CHP w/natural gas = 10%
 - CHP w/digester gas = 10%, maybe 30%
 - Accelerated 5 yr asset depreciation (MACRS)
 - Must be a taxable entity in order to take advantage
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- ### Other Benefits
- Demand Response
 - Payments for ability to remove electrical from grid
 - 100% load first year
 - Renewable energy credits
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- ### Financing Mechanism #1
- Traditional Debt Financing*
- Bonds
 - Revenue bonds
 - tied to revenues/rates of utility
 - General Obligation
 - Obligated to pay the debt before anything else
 - Environmental Infrastructure Trust
 - Combination of 0% interest loans and revenue bonds
 - 50+% below traditional bond rates
 - 20 years max term
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- ### Financing Mechanism #2
- Energy Savings Improvement Program (ESIP)*
- What is ESIP?
 - Enables public entities to engage in multi-year performance contracts
 - Funding: future value of energy savings pays for the upfront cost
 - Advantages of ESIP for CHP
 - Many public facilities are well suited for CHP (WWTPs, etc.)
 - 20 year contract for CHP
 - Disadvantages of ESIP for CHP
 - Restrictive development process
 - ESCO doesn't control energy audit, bidding process, M&V, etc.
 - No knowledge of ESIP/CHP projects to date
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- ### Financing Mechanism #3
- Public Private Partnership (P3)*
- What is P3
 - Permits private entities to construct, finance, own, operate and maintain facilities for public entities.
 - Projects are privately financed (100%)
 - Public entity retains ownership of land
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Why P3 for Water/Wastewater

- Aging Energy/Water Infrastructure
- Financial pressures
 - Pensions, debt obligations, ratings downgrade
 - Lack of Funding: Capital Improvements, O&M
- Regulatory Compliance
- Public sector needs solutions



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DIY vs P3

Decision Criteria	Traditional Self Funded	P3
Use City's capital capacity	YES	NO
Credit rating sensitivity	YES	NO
Monetize tax benefits (ITC, New Markets Tax Credits, etc.)	NO	YES
Known "all-in" lifecycle costs (CapEx, O&M, repairs, insurance, etc.)	NO	YES
Eliminate risk and optimize contractor management – design, construction, O&M	NO	YES
CHP expertise, core competency	NO	YES



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P3 Precedents

- Bayonne MUA
 - 40 year P3, private operator to manage BMUA
 - \$175M concession payment (\$120M to retire Bayonne debt)
 - Revenue certainties via upgrades for efficiency, metering, billing
- NJ Economic Stimulus Act
 - Legislation making P3 applicable to colleges
 - Montclair State, and more to come
 - E.g. CHP, dormitories, etc.
 - May soon extend to other public segments?
- Solar PPAs



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Other Possible P3 Options

- **Utility Services Agreement (USA)**
 - No up front costs or minimum payment obligation
 - Client pays for energy received on a unit price basis
 - Electricity: \$ /Kwh
 - Hot water: \$ /mmBtu
 - Possibility for off balance sheet treatment



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P3 Income Statement

Revenue	
Electric	
Hot Water	
Grants	NJ CHP
Expenses	
Fuel	Gas
Water	Makeup, Sewer
O&M	Fixed/variable, FTES, LTSAs, consumables, etc.
Admin	Monitoring, management, reporting, billing, legal....
Insurance	Property...
EBITDA	
Depreciation	MACRS 5 year
Interest	Financing
Taxes	Fed, state, local, property...
Tax Credits	ITC
Total Income	May take several years to breakeven



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Thoughts, Reactions.....

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