

Renewable Energy Credits, Grants, and Funding

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Sustainable Energy Project Development Workshop

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Introduction

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Supporting the appraisal,
development, and financing of
energy efficiency and clean
energy projects



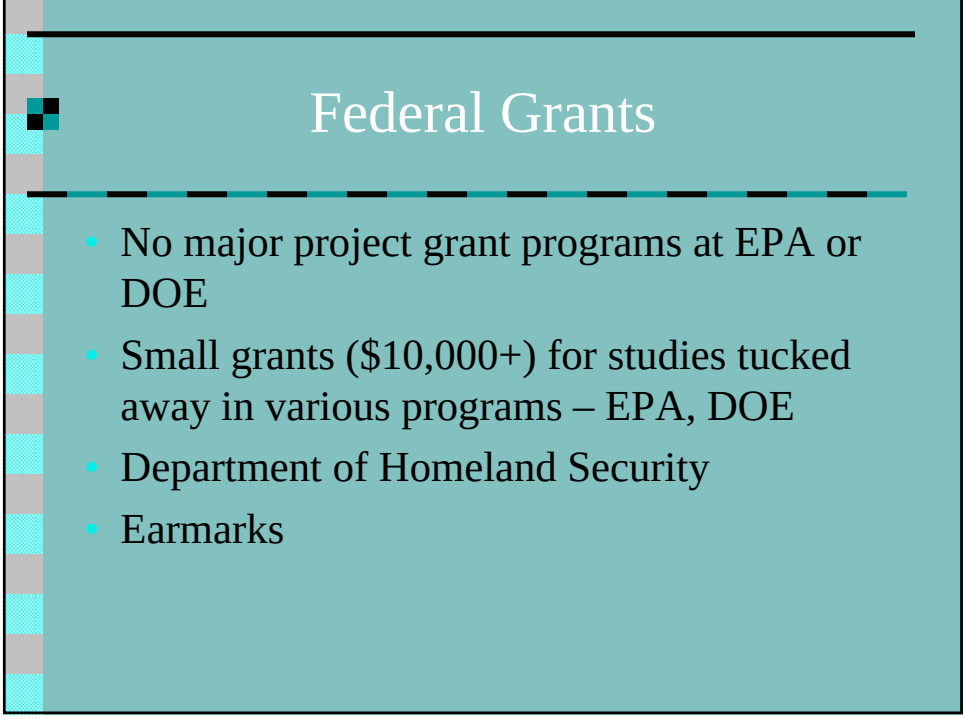
Overview

- Grants & Rebates
 - Federal and state
- Production credits
- Environmental credits
 - Renewable Energy Certificates (RECs)
 - NOx allowances
 - Carbon credits
- Financing approaches
 - Bonds, leases, performance contracting, private participation

Grants & Rebates

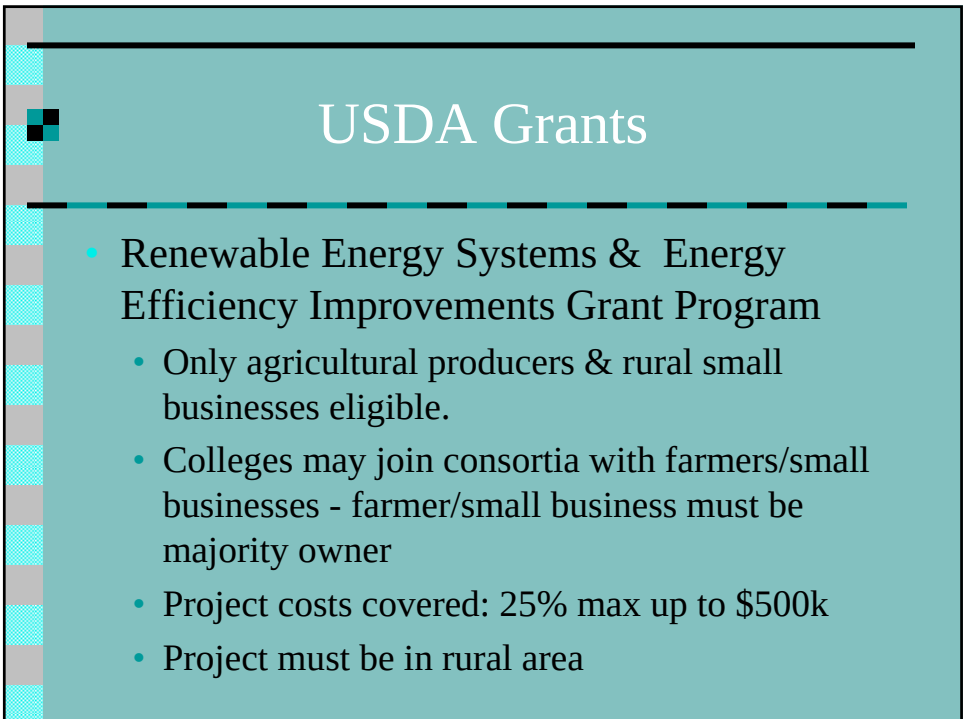
- Grants & Rebates:
www.dsireusa.org
- State clean energy funds
- Clean air funds for State Implementation Plan
- Homeland security funds
- EPA Supplemental Environmental Projects





Federal Grants

- No major project grant programs at EPA or DOE
- Small grants (\$10,000+) for studies tucked away in various programs – EPA, DOE
- Department of Homeland Security
- Earmarks



USDA Grants

- Renewable Energy Systems & Energy Efficiency Improvements Grant Program
 - Only agricultural producers & rural small businesses eligible.
 - Colleges may join consortia with farmers/small businesses - farmer/small business must be majority owner
 - Project costs covered: 25% max up to \$500k
 - Project must be in rural area



USDA Guarantees

- Renewable Energy Systems & Energy Efficiency Improvements Loan Guarantee Program
 - Same eligibility as Grant program
 - Coverage:
 - 85% for projects up to \$600k
 - 80% up to \$5 million
 - 70% up to \$10 million



Energy Security Act of 2007 Section 471

- Technical assistance grants for “a portion” of study costs
- Energy efficiency project grants – on-site renewable energy included
- Grants for “innovative” energy technologies
- **No FY '08 appropriations or FY '09 request**

Renewable Energy Production Incentive (REPI)

- Generator receives 1.5 cents/kWh (1993 dollars and indexed for inflation)
- 10 year term
- Eligibility: Public entities and electric coops
- No MSW-powered plants
- **Subject to available appropriations**

Environmental Credits

- Renewable Energy Certificates
- Carbon Credits
- NOx Allowances



Renewable Energy Certificates

- RECs represent the “environmental attributes” of green power
- Denominated in kWh (or MWh)
- Cost 1¢ - 3 ¢ per kWh (PV is much higher)
- Linked to actual kWh generated
- Certification
- To sell or not to sell your RECs

Environmental Credits

- Carbon credits
 - Voluntary markets
 - Regional efforts
 - Chicago Climate Exchange
- NOx Allowances
 - SIP compliance

Financing Options

- Short-term debt
 - Bank loan (term loans, lines of credit)
- Long-term debt
 - Loan from operating fund
 - Component of bond issuance
 - Endowment loan



Clean & Renewable Energy Bonds (CREB)

- 0% interest rate paid by borrower
- Bond holders get tax credits in lieu of interest
- Can cover up to 100% of project costs
- Eligibility: Public entities – cities, states, tribes, electric coops, public colleges & universities
- **Fully subscribed** – more applicants than funds available (\$1.2 billion)

More Financing Options

- Lease
- Performance Contract
- Private Ownership
 - Minnesota “Flip” Model – for wind
 - Private owners gets tax credits, gov’t rebates, RECs, PPA, etc.
 - PPA - for PV
 - Dependent on state tax incentives

Cost of Renewable Energy

	per installed KW	per kWh generated
• Wind	\$1,700 - \$2,300	4.5¢ - 8.0 ¢
• Biomass	\$1,300 - \$3,000	4.5¢ - 8.0¢
• Solar PV	\$5,500 - \$6,300	30¢ - 80¢

Post-Construction Revenue Streams

- Electricity sales (or reduced elec. bills)
- Reduced peak demand charges
- REC sales
- Emission reductions
- Production credit
 - Federal & State
- Tax credit
 - Federal & State



First Year Revenues & Costs for a 100 KW Solar PV System

• Revenues		Assumptions Installed cost: 6.50/watt Rebates: 3.50/watt Cost: \$325,000 Avg. daily power gen: 650 kWh Annual power gen: 193,450 kWh Electric rate: \$.18/kWh
• Reduced grid purchases	\$38,690	
• REC sales @ \$.75/kWh	\$ 1,450	
• Total Revenues	\$40,140	
• Expenses		
• O&M	\$ 3,250	
• Operating Cash	\$36,890	
• Debt Service @ 5%, 15 yr	\$31,311	
• Coverage ratio 1.18		
• Project Reserves	\$ 5,579	

First Year Revenues & Costs for a Small 10 KW Wind Turbine

Revenues		Assumptions
Electricity sales/savings	\$4,320	Cost: \$34, 950
		Avg. daily output: 65.76 kWh
		Annual output: 24,000 kWh
		Electric rate: \$.18/kWh
Expenses		
O&M	\$ 349	
Operating cash flow	\$3,970	
Debt Service, - 5% int, 5 yr	\$3,367	
Coverage ratio 1.18		
Project reserves	\$ 603	

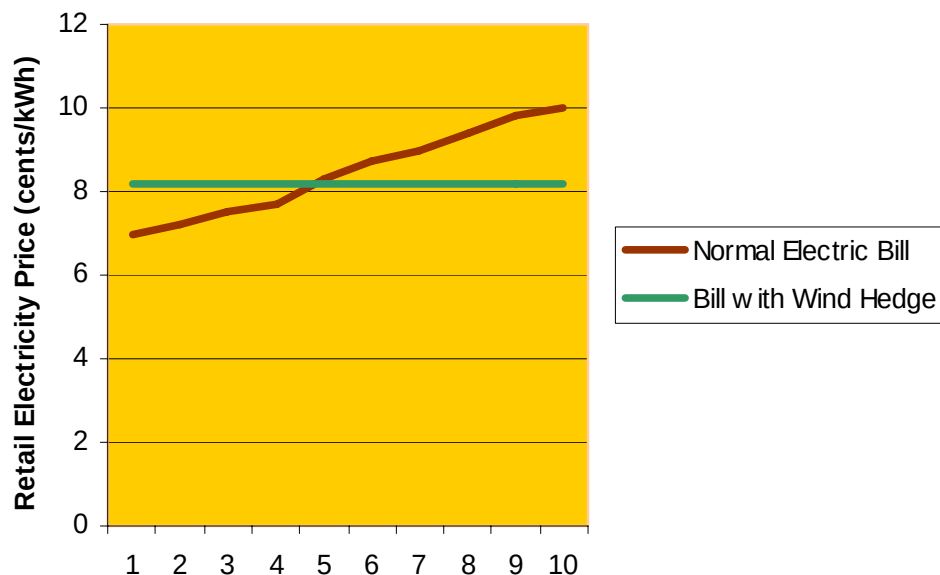
First Year Revenues & Costs for a 750 KW Wind Turbine

Revenues on 4,700,000 kWh/yr		Assumptions:
PPA @ \$.035/kWh	\$164, 500	Project Cost: \$1,283,334
State prod. pmt @ \$.015/kWh	\$ 70,228	Debt: \$958,344 @ 7% int, 10 yr term
Total Revenues	\$234,728	Equity: \$325,000
Expenses		
Mgmt fee	\$ 22,500	
Service warrantee	\$ 22,000	
Elec. usage	\$ 1,000	
Land lease	\$ 4,000	
Insurance	\$ 10,000	
Total Expenses	\$ 59,500	
Operating Cash	\$175,228	
Debt Service	\$136,447	
Coverage ratio 1.21		
Project reserves	\$ 38,781	
Fed PTC value	\$ 79,591 (This value will increase over 10 yrs)	
Depreciation value	\$105,876 (This value will decrease over 5 yrs)	

Renewable Energy Hedge

- A way to capture the price stability of renewable energy
- Local utility enters into long-term fixed-price contract with a green power generator
- Utility passes on the contract to consumers
- Example: Austin Energy and Concordia University
- Only affects the generation portion of the utility bill

Using Wind RECs to Hedge Fuel Price Volatility



Contract-For-Differences for Wind Power

- A forward contract between the college / university and a power supplier
- Parties pay each other as the wholesale price of electricity fluctuates above or below a strike price
- Can be undertaken for either conventional power or green power

Contract-For-Differences for Wind Power

