Characteristics of Net Metering Systems

On NorthWestern's system, net metering systems are exclusively solar PV systems or small-scale wind generators.

Non-Dispatchable

Net metering systems cannot be turned on, turned off, ramped up, or ramped down to match utility loads.

Intermittent, Unstable Power Supply

Power output of net metering systems is highly variable, principally dependent on weather conditions and sunlight. Net metered power is unscheduled, and cannot easily be scheduled, which prevents net metered power from displacing generating capacity at other generators on the utility's system.

Low Capacity Factor

The capacity factor is the amount of power a generator will produce given its nameplate capacity over one year (8,760 hours). Solar PV systems have a capacity factor of about 15%, and small-scale wind turbines about 9%.

High Capital Costs

Net metering systems have high capital costs per unit of output. Small-scale solar PV and wind systems cost between $4,000 and $9,000 per kilowatt of generating capacity, generally double or more, of the cost of larger generation systems.

Short Depreciation Period

Net metering systems wear out much more quickly than do larger generators. A typical solar PV system has a life expectancy of about 20 years, which is much shorter than the depreciated life of coal and hydro units.

High Cost Power

The low capacity factor, high capital costs, and shorter depreciation periods combine to make net metered power very expensive.

No Fuel Cost

Solar PV and wind generators have no fuel costs. Neither does hydroelectric power. Coal and gas plants have fuel expenses. Those costs generally constitute between 25 and 50 percent of the cost of power from a thermal plant depending upon the type of fuel used and how the plant is operated.

No Emissions

Solar PV and wind generators, unlike thermal generating stations, have no emissions. At the same time, the use of net metered power in Montana does not reduce emissions from thermal generating stations because net metered power is not scheduled.

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The Capital Costs of Solar PV Net Metering Systems

System Size	5 kW
Cost per kW	$4,000
Depreciation Period	20 years
Capacity Factor	15%
Power Production Per Year	6,570 kWH

	Case 1	Case 2	Case 3
	Customer Pays Cash	Customer Uses Home Equity Loan at 4% for 10 Years	Customer Uses Conventional Unsecured Loan at 5.5% for 10 Years
Installed Cost	$20,000	$20,000	$20,000
Interest Rate	0	4%	5.50%
Total Capital Cost with Interest	$20,000	$24,299	$26,046
Capital Cost per Year	$1,000	$1,215	$1,302
Divided by Annual kWH	6,570	6,570	6,570
Capital Cost kWH	15.2 cents/kWH	18.5 cents/kWH	19.8 cents/kWH

Capital Cost of Hydro Acquisition

2.8 cents/kWH

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Taxpayer and Ratepayer Cost Shifting and Subsidies
for
Net Metering

When a party with a net metering installation generates power, that power first flows to the home or business, where it is used in place of power from the utility. If there is little or no need for the power in the home or business, the power flows through the electric meter, spinning it backward, reducing charges the party incurred when its generator was off and it took power from the utility.

A NorthWestern utility bill consists of two basic components – electricity supply and transmission/distribution (T&D). A party engaged in net metering puts electricity (i.e., supply) into the grid, but when their meter spins backward, they are getting credit for both the supply component of the bill and the T&D charge.

Ratepayer Cost Shifting

T&D/Generation Cost Shifting. The transmission/distribution grid is a standby system that all customers can make use of whenever they want. People who net meter use the T&D grid in two ways -- first, when the utility supplies them with power for use in their home when their generator is not functioning; and second, they use the T&D grid as a means to transfer their excess power to the utility. But, when power is net metered, the party using net metering doesn't pay their fair share of the T&D expenses. That results in a cost shift to other customers who don't net meter and provides a subsidy to those who do net meter. In addition, a net metering customer makes use of the utility's generation plants when his system is not operating.

The current charge for delivered power is 10.8¢/kWH, or $108.00/MWH.

USB Subsidy

Every electricity ratepayer in the state, including the Coops, pays the Universal Systems Benefit (USB) charge – a tax which is equal to 2.4% of the utility's 1997 revenue. On NorthWestern's system, that generates over $9.0 million per year. Renewable Energy (i.e., net metering) installations are allocated 11% of the

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