



## **Net Metering Regulations & Tariff**

Financial Implications &  
Potential Business Scenarios

**Massachusetts Wind Working Group meeting, October 8, 2009**

John Harper, Birch Tree Capital, LLC

# Birch Tree Capital Background

- Independent financial advisory consulting firm
  - Structuring ownership and financing for power projects
  - Focus on renewable power/cleantech sectors
  - Experience with multiple technologies (wind, PV, biomass)
  - Clients have included
    - Strategic and tax-oriented equity investors
    - Project developers
    - Public sector entities at local, regional, state, and Federal levels
  - Member of New Energy Group collaborative of clean & renewable power advisors

# So, what will be the financial impact?

- Well, it depends.
- What will change?
  - More revenues for net excess generation for projects <60kW
  - Revenues for net excess generation from projects >60kW
    - Note: generation price still varies by Host Customer load
  - Credit for certain delivery charges (but not all)
    - Specific charges included varies by unit size and Host Customer business
    - Preferences for <1MW and for installations by towns and farms.
- What won't change?
  - No change in system capital costs
  - No change in system operating costs.
  - No credit for monthly customer charges paid to utility.
  - No credit for any capacity payments received by the utility from ISO-NE.
  - No required utility payment for the RECs generated by the system.

# For those who prefer tables:

<u>Credit Calculation</u>		<u>Units</u>	<u>Class I</u> <u>(Other</u> <u>types)</u>	<u>Class I-</u> <u>Wind, PV,</u> <u>Ag. Bus.</u>	<u>Class II</u>	<u>Class III</u>	<u>Neighbor-</u> <u>hood Net</u> <u>Metering</u>
Delivery	Customer Charge	\$/month					
	Distribution Demand Charge	¢/kW					
	Distribution Energy Charge	¢/kWh		✓	✓	*	
	Transmission Energy Charge	¢/kWh		✓	✓	✓	✓
	Transition Charge	¢/kWh		✓	✓	✓	✓
	System Benefit Charge						
	DSM (EE)	¢/kWh					
	RE	¢/kWh					
Supply	Basic Service	¢/kWh		✓	✓	✓	✓
Generation	Avg. Monthly Clearing Price at the ISO-NE	¢/kWh	✓				
* Credit only when the Host Customer is a municipality or other governmental entity							

Source: Adapted from <http://sites.google.com/site/massdgc/Home/net-metering-in-ma>

# For those who prefer rates:

<u>Indicative Net Metering Credits</u> (NStar's Gen. Annual Bus. Rates for Plymouth)		<u>Units</u>	<u>Class I</u> ( <u>Other</u> <u>types</u> )	<u>Class I-</u> <u>Wind, PV,</u> <u>Ag. Bus.</u>	<u>Class II</u>	<u>Class III</u>	<u>Neighbor-</u> <u>hood Net</u> <u>Metering</u>
Delivery	Customer Charge	\$/month					
	Distribution Demand Charge	¢/kWh					
	Distribution Energy Charge**	¢/kWh		4.172	4.172	4.172*	
	Transmission Energy Charge	¢/kWh		1.294	1.294	1.294	1.294
	Transition Charge	¢/kWh		2.022	2.022	2.022	2.022
	System Benefit Charge						
	DSM (EE)	¢/kWh					
	RE	¢/kWh					
	<i>Total Delivery Credit Rate (¢/kWh)</i>			7.488	7.488	7.488	3.316
Supply	Basic Service***	¢/kWh		9.241 (6.969)	9.241 (6.969)	9.241 (6.969)	9.241 (6.969)
	Generation	Avg. Monthly Clearing Price at the ISO-NE (August)****	¢/kWh	3.825			
	<i>Total Credit Rate (¢/kWh)</i>			3.825	16.729 (14.457)	16.729 (14.457)	12.557 (10.285)
<p>* Credit only when the Host Customer is a municipality or other governmental entity.  ** Rate for first 2,300 kWh (lower credit rate applies for add'l. kWh)  *** October variable rates for small (and large) commercial/industrial customers  **** Source estimate: <a href="http://www.iso-ne.com/markets/hstdata/znl_info/monthly/index.html">www.iso-ne.com/markets/hstdata/znl_info/monthly/index.html</a>  (note: official source still to be determined)</p>							

Rate sources: [http://www.nstaronline.com/ss3/business/rates\\_tariffs/rates/rates.asp](http://www.nstaronline.com/ss3/business/rates_tariffs/rates/rates.asp)

# Host customer load matters:

			Class I or II units		Priv. Class III	
Indicative Net Metering Credits		Units	Home (R1)	Large General (G-3)	General Annual (G-1)	General Annual (G-1)
<i>(NStar's Gen. Annual Bus. Rates for Plymouth)</i>						
Delivery	Customer Charge	\$/month				
	Distribution Demand Charge	¢/kWh				
	Distribution Energy Charge*	¢/kWh	5.005	1.352	4.172	
	Transmission Energy Charge	¢/kWh	1.272	1.358	1.294	1.294
	Transition Charge	¢/kWh	2.010	0.000	2.022	2.022
	System Benefit Charge					
	DSM (EE)	¢/kWh				
	RE	¢/kWh				
	<b>Total Delivery Credit Rate (¢/kWh)</b>		8.287	2.710	7.488	3.316
Supply Generation	Basic Service	¢/kWh	9.077	6.969 **	9.241 ***	9.241
	<b>Total Credit Rate (¢/kWh)</b>		17.364	9.679	16.729	12.257
* G-3 Rate for Peak Load (lower credit rates for Low Load A & Low Load B periods) G-1 Rate for first 2,300 kWh (lower credit rate for additional kWh)						
** October variable rate for large commercial/industrial customers						
*** October variable rate for small commercial/industrial customers						

Rate sources: [http://www.nstaronline.com/ss3/business/rates\\_tariffs/rates/rates.asp](http://www.nstaronline.com/ss3/business/rates_tariffs/rates/rates.asp)

# Diverse scenarios using net metering

Variations in value of net metering based on:

- Absolute size of facility (or unit, if publicly owned)
- Technology type
- Host Customer business (agricultural/government/other)
- Host Customer load at site
- Host Customer load at other sites
- Host Customer location
  - Only investor-owned utilities have to offer net metering, though munis can)
- Ownership (public/private)
- Financing

# Scenarios & implications #1

## Residential (the “Classic”):

- *Location: Host Customer’s backyard*
- *Ownership: Host Customer (Harry & Harriet Homeowner)*
- *Size: Class I (2.4kW wind turbine)*
- *Usage: All used behind-the-meter; no monthly net excess generation (“NEG”)*
- *Financing: Cash paid up-front by Host Customer*

Financial Impact: *None (savings from power generated, but no NEG, hence no net metering credits)*

## Implications:

- *Net metering program focused on larger installations*
- *Prospect of credits might spur slightly larger installations where feasible*
- *Financing the initial sale*
  - *PV system integrators devising financing options for residential sector*
- *Host Customer indifferent to variations/uncertainty in generation credit*
- *Attractions of hosting a Class II-scale facility may cannibalize some Class I installations*



# Scenarios & implications #2

## Community-scale (“Community Wind”):

- *Location: Host Customer’s backyard*
- *Ownership: Host Customer (or private developer)*
- *Size: Class II (100kW wind turbine)*
- *Usage: Exceeds Host Customer needs; credits allocated to other utility customers*
- *Financing: a cooperative? A USDA grant?*

Financial Impact: *NEG credits for generation and most delivery charges*

## Implications:

- *Automatic contract path & crediting are biggest benefits*
- *Hosting a Class II-scale facility has some benefits*
  - *Cost-sharing with other utility customers (need not be neighbors)*
  - *Credit for the Distribution energy delivery charge*
  - *Facilitates aggregation & sale of RECs*
  - *Siting benefits: access to windier site & fewer turbines in the community*
  - *Confirm eligibility for Federal tax incentives (PTC/ITC/Grant in lieu of ITC)*
- *Business opportunity for a light commercial developer willing to build/own/operate the unit*

# Scenarios & implications #3

## Commercial (“LEED is good” Manufacturer):

- *Location: In front of Host Customer’s building*
- *Ownership: Host Customer*
- *Size: Class II (100kW wind turbine)*
- *Usage: Intended to offset host load; little or no NEG*
- *Financing: Host Customer equity & possibly corporate loan by local bank*

Financial Impact: *Little or none; not a factor in the Go/No go decision*

## Implications:

- *Risk mitigant (NEG sales if on-site load declines) is biggest benefit*
- *Fosters installing larger unit for higher portion of Host Customer load*
- *Confirm that Host Customer qualifies for Federal tax incentives*
- *RECs likely retired by Host Customer (instead of sold)*
- *Host Customer indifferent to variations/uncertainty in generation credit*
- *Business opportunities for a contractor*
  - *Brokerage role to manage REC sales, if any*
  - *Build/operate the turbine*

# Scenarios & implications #4

## Commercial (“The 21<sup>st</sup> Century Flagpole”):

- *Location: In front of Host Customer’s building*
- *Ownership: Private developer*
- *Size: Class II (750kW wind turbine)*
- *Usage: Offsets host load and then some; regular NEG credits*
- *Financing: Developer equity, USDA funding?*

Financial Impact: *NEG credits for generation & most delivery charges*

## Implications:

- *Automatic contract path & credit allocation ability are biggest benefits*
- *Fosters installing higher percentage of customer load*
- *Fosters farm-based projects (“Agricultural Net Metering Facility”)*
- *Business opportunities for a developer*
  - *Third party ownership – developer owns the turbine, sells power to Host*
  - *Manage NEG credit allocations & REC sales*
  - *A commercial sector-oriented variation of Scenario 2*
- *Structure project to qualify for Federal tax incentives*

# Scenarios & implications #5

## Municipal (“Turbine at the Town Landfill”):

- *Location: Municipal land in town served by an investor-owned utility*
- *Ownership: Town (possibly private developer)*
- *Size: Class II (750kW wind turbine) Note: class limit is per unit if publicly owned*
- *Usage: Offset portion of town’s aggregate load; no NEG*
- *Financing: Town bond (a revenue bond or a CREB?)*

Financial Impact: *Savings by offsetting loads from multiple, dispersed town facilities, but no NEG credits*

## Implications:

- *Credit for multiple meters (schools, city hall, etc.) is biggest benefit*
- *Enables installing higher percentage of aggregate municipal load*
- *Business opportunities for a developer*
  - *Build/operate the turbine*
  - *Brokerage role to sell RECs (if town doesn’t retire them)*
  - *Brokerage role to find other utility customers to join in project costs/savings*
  - *Ownership to access incentives & financing available only to private sector*

# Scenarios & implications #6

## Commercial (“Distributed Power Project”):

- *Location: Private land owner*
- *Ownership: Private developer*
- *Size: Class III (1.5MW wind turbine)*
- *Usage: Minimal load behind the meter; significant NEG*
- *Financing: Developer equity, local bank, USDA funding?*

Financial Impact: *credit for generation and some delivery charges  
(no credit for distribution energy charges)*

## Implications:

- *Automatic contract path is biggest benefit*
- *Business opportunity for a utility-focused serial project developer*
- *Consider siting behind municipal meter (to get distribution credit)*
- *Manage NEG credit allocations & REC sales*
- *How mitigate financing risk from variable generation credits & RECs*
- *Need for the utility to pay cash (or project to find bankable customers)*
- *Limit the number of customers*

# Scenarios & implications #7

## Neighborhood (“Neighborhood net metering facility”):

- *Location: Host Customer land*
- *Ownership: Host Customer, other neighbors, and/or private developer*
- *Size: Can be any class & any size turbine (e.g., a 100kw wind turbine)*
- *Usage: Some load behind the Host Customer’s meter; significant NEG*
- *Financing: Customer-financed, or third party financing*

Financial Impact: *credit for generation and some delivery charges  
(no credit for distribution energy charges)*

## Implications:

- *Automatic contract path & credit allocation ability are biggest benefits*
- *Not as attractive as regular Class I or II facility*
- *Eligibility mandates (serve 10+ homes; all customers in same town)*
- *Differing customer views on retiring/selling RECs*
- *Business opportunity for a community-focused project developer*
- *Manage NEG credit allocations & any REC sales*
- *Same financing hurdles as for scenario #6*

# Overall implications

- Host Customer size (generation rate) and type are key drivers
- Can achieve benefits of neighborhood net metering w/o formality
- Principal benefit of net metering varies by the scenario
  - For Host Customers with little expected NEG, facilitates larger installations (credits at near retail prices for any NEG produced)
  - For Towns, ability to aggregate multiple meters
  - For Developers, automatic contract path (if utility pays cash)
- Sweet spot: Class II units for Hosts paying small commercial rate
  - Combo of distribution energy credit and small commercial generation rate
  - But, economies of scale for a larger Class III turbine may outweigh lower rates
- Financing as competitive advantage
  - Finding passive investor(s) able to use accelerated depreciation
  - Finding a bank comfortable with net metering risks/details
  - DOE's pending delegated lender commercial loan guaranty program
  - USDA grants & loans for farm-based energy projects

# USDA Rural Energy for America (REAP)

## 2009 Program Awards

State	Projects	Total Grants	Total Loan Guarantees	combined	% of \$	% of projects
IA	361	\$13,779,830	\$20,829,126	\$34,608,956	38%	28%
OH	27	\$9,195,779	\$1,619,000	\$10,814,779	12%	2%
MN	159	\$3,823,864	\$2,566,322	\$6,390,186	7%	12%
IL	88	\$3,237,159	\$2,953,314	\$6,190,473	7%	7%
NE	160	\$2,698,865	\$2,566,305	\$5,265,170	6%	12%
MA	14	\$2,409,327	\$1,569,000	\$3,978,327	4%	1%
Totals	1,301	\$48,107,312	\$42,521,550	\$90,628,862	100%	100%

Awards summarized by state, as of September 25, 2009.

(Note: Some data not yet available for state awards).

Source: <http://farmenergy.org>

For FY2010, REAP budget likely to be \$99 million.



# Some continuing questions

- Implementation date?
- Is there a scenario where the neighborhood net metering designation makes sense?
- Will the discos elect to pay cash for net excess generation?
- Can the discos change their initial cash/credit elections?
- What default generation service rate class will be used for *de facto* greenfield sites?
- What is impact if Host Customer uses a Competitive Supplier?
- Can a Host Customer use the Federal tax incentives?
- How quickly will the 1% cap be reached for each disco?

# Birch Tree Capital Background

- Recent mandates:
  - Advising a MA-based community wind-scale developer on project financing options.
  - Facilitating a state's review of the DOE loan guaranty program.
  - Advising a PV engineering design firm on financing for distributed power projects.
  - Closed venture equity and debt for biomass gasification company.
  - Co-authored 2007 report on utility-scale wind financing structures for DOE Lawrence Berkeley National Laboratory
  - Assisted a life insurance company on investing tax-oriented equity in 290MW of new wind projects.
  - Co-authored 2006 study on using a cooperative to finance community-scale wind projects for the Cape Light Compact.

Thank you.

John Harper  
Birch Tree Capital, LLC  
(617) 803-7338  
[www.birchtreecapital.net](http://www.birchtreecapital.net)

