MA DPU Grid Modernization Working Group

Questions for Utilities Regarding Current Meter Practices - Second Set

Responses of Fitchburg Gas and Electric Light Company d/b/a Unitil

Date Issued: March 6, 2013

Date Responded: March 20, 2013

2.1 Estimated retirement schedule of current meters

Please expand upon the data provided in response to the first set of meter questions, by providing your best estimate of the number of meters that your company expects to retire and/or replace for each year from 2013 through 2042 (or the date by which all current meters are expected to be replaced).

If you do not currently have such a retirement schedule, please estimate what one might be by adding your estimated operating life to the installation date of your current meters. If you have a specific meter retirement schedule that deviates from this methodology, then please present the retirement estimates from your schedule and describe how it was developed.

Ideally, we would like to be able to fill in the following table:

Year	Number of Meters Retired (annual)	Number of Meters Retired (cumulative)	Percent of Meters Retired (annual)	Percent of Meters Retired (cumulative)
2013				
2014….				
2042				
Total				100%

Please provide the data by meter type (e.g., energy or demand), by customer size (e.g., up to 200 kW), or by customer class (e.g., R-4 and G2), to the extent that the information is relevant and available for your company.

Unitil Response: Unitil does not have a retirement schedule. The table below is based on the original installation dates, assumes a 20 year life of replacement, and a minimum replacement of 100 per year due.

Year	Estimated Number of Meters to be Retired by Rate Class							
	G1	G2	G3	G4	G5	R1	R2	Grand Total
2013	7	6	0	0	0	71	16	100
2014	7	6	0	0	0	71	16	100
2015	7	6	0	0	0	71	16	100
2016	7	6	0	0	0	71	16	100
2017	7	6	0	0	0	71	16	100
2018	7	6	0	0	0	71	16	100
2019	7	6	0	0	0	71	16	100
2020	7	6	0	0	0	71	16	100
2021	7	6	0	0	0	71	16	100
2022	7	6	0	0	0	71	16	100
2023	7	6	0	0	0	71	16	100
2024	7	6	0	0	0	71	16	100
2025	15	11	0	0	1	548	143	718
2026	1065	651	9	1	4	14585	3223	19538
2027	330	461	5	0	4	798	186	1784
2028	145	110	2	2	0	596	186	1041
2029	146	126	0	0	0	566	120	958
2030	118	64	4	0	0	776	214	1176
2031	131	39	1	0	0	819	187	1177
2032	91	48	1	0	0	844	162	1146
Grand Total	2125	1582	22	3	9	20384	4613	28738

2.2 Current meter replacement costs

In response to the first set of meter questions, each company explained that when a meter reaches the end of its useful life it is replaced with a "like" meter. Please provide an estimate of the average cost (per meter) of the like meters to be installed in 2013 (or the most recent year where cost data are available).

Please provide separately equipment costs, installation costs, and any other relevant costs.

Unitil Response: The table below is based on 2013 costs.

Customer Type	Type	Life	Type of Meter	Invoice Cost	Labor Testing Cost	Labor Exchange Cost	Total Exchange Cost
R1 - R2	L&G Focus Hunt Endpoint	20	Single Phase non-demand Class 200	$ 133.00	(0.25) hr $ 8.41	(0.5) hr $ 16.83	**$ 158.24**
R1 - R2	L&G Focus Hunt Endpoint	20	Single Phase non-demand Class 320	$ 170.00	(0.25) hr $ 8.41	(0.5) hr $ 16.83	**$ 195.24**
G1 & G2	L&G Focus AX Hunt Endpoint	20	Single Phase demand Class 200	$ 186.00	(0.25) hr $ 8.41	(0.5) hr $ 16.83	**$ 211.24**
G1 & G2	L&G Focus AX Hunt Endpoint	20	Single Phase demand Class 320	$ 216.00	(0.25) hr $ 8.41	(0.5) hr $ 16.83	**$ 241.24**
G2	GE Kv2c Hunt Endpoint	20	Polyphase self-contained Class 300	$ 350.00	(0.5) hr $ 16.83	(0.5) hr $ 16.83	**$ 383.65**
G2	GE Kv2c Hunt Endpoint	20	Polyphase transformer-rated Class 20	$ 350.00	(0.5) hr $ 12.50	(1) hr $ 33.65	**$ 396.15**
G3	GE Kv2c Hunt Endpoint	20	Polyphase transformer-rated Class 20	$ 532.00	(1) hr $ 33.65	(1) hr $ 33.65	**$ 599.30**

2.3 Options for maintenance, replacement, or retirement of expired meters

Please describe the various options available to the company when a current fails or requires replacement (e.g., replacing end points, replacing other components, replacing the entire meter). Please describe the company's policy for choosing among these options, and explain which options are most frequently taken.

Unitil Response:

Our current practice is to replace an endpoint if it fails. We also replace the meter if any component of the meter fails. In the event the meter fails and we can salvage the endpoint, we will save the endpoint. The most frequent scenario we face is the endpoint failing and being replaced.

2.4 Provision of interval data to competitive suppliers

Please provide a timeline and description of the steps for a competitive supplier to receive interval data for a customer? Is a letter of authorization required or is enrollment sufficient? Is there a subscription fee (how much)? Is there a lag between provision of data to the supplier and to the ISO? Is the data provided through EDI or some other means?

Unitil Response:

The process for a competitive supplier requesting interval data for a customer within Unitil's service territory is as follows. The competitive supplier emails the EL_Supplierservices@unitil.com inbox requesting interval data. For existing suppliers a letter of authorization is not required; however, for other suppliers seeking interval data a letter of authorization for the customer(s) for which they are requesting interval data is required. For each such customer, a competitive supplier may request either a year's worth of interval data, or a subscription service to receive monthly interval data for a period of one year. As specified in the Company's tariff (Schedule IDS), if the request for a year's worth of interval data is the first request for historical interval data within the calendar year, there is no charge. For each subsequent request within the same calendar year, Unitil charges a fee of $49.26 for each account. If the competitive supplier requests monthly interval data for a period of one year, the charge is $346.92 per account as specified in the tariff.

As for the relative timing of reporting data to competitive suppliers and to ISO-NE, the Company aggregates available interval data and estimated hourly data by retail supplier and typically reports these to ISO-NE every business day1. Only a few of the Company's interval metered customers have telemetering equipment installed. For these customers, the Company reads the meter daily and includes actual interval data available with its submittals to ISO-NE2. For interval customers without telemetering and for non-interval customers, the Company estimates hourly reads each day for inclusion in daily load reporting to ISO-NE. Well after the end of each month, when non-telemetered interval meters have been read and non-interval metered customers have been billed, the Company revises and resubmits the wholesale loads to ISO-NE. In contrast, interval data is provided to competitive suppliers on a monthly basis shortly after the customer's monthly bill is released. Interval data requests from competitive suppliers, whether for historical data or for an annual subscription, are typically processed within a few business days through direct correspondence via the EL_Supplierservices@unitil.com inbox. The Company does not currently use EDI for communicating interval data.

[1] Under ISO-NE rules, initial wholesale load reporting is required to be submitted to ISO-NE within 37 hours after the start of the next business day. Final wholesale load reporting is required to be submitted at later dates, as late as 99 days after the end of the month.

[2] Note that interval data that is available every day is aggregated with other data before being sent to ISO-NE. A rare exception would be when a retail supplier serves only one customer and that customer has interval metering and telemetered service.

2.5 Time Of Use Rates

Please provide the following information on your existing time of use rates.

- The number of customers by customer class on your TOU rates.

  Unitil Response: Unitil has 30 customers on GD-3 and Special Contract TOU rates and 3 customers on GD-4 optional TOU rates. The Company does not offer residential or small general service time of use rates (D.P.U. 02-24/25).

- Brief descriptions of the structure and charges of the TOU rates.

  Unitil Response: The GD-3 rate is a mandatory time of use rate for the large general service customers over 120,000 kWh per month. The GD-4 rate is an optional time of use rate for regular general service customers and is closed to new applicants. For both classes, the on-peak period is from 7AM to 10PM on non-holiday weekdays. The distribution and internal transmission energy charges are differentiated between the on and off-peak periods and the demand charges are only billed for demands which occurred during the on-peak period.

- Information on how TOU rate options are currently made available and marketed to customers.

  Unitil Response: Since the GD-3 rate is a mandatory time of use rate and the GD-4 rate is closed to new applicants, the Company does not actively perform any marketing activities for these rates.

MA DPU Grid Modernization Working Group

Questions for Utilities Regarding Current Meter Practices

Second Set

Response of National Grid

March 6, 2013

2.1 Estimated retirement schedule of current meters

Please expand upon the data provided in response to the first set of meter questions, by providing your best estimate of the number of meters that your company expects to retire and/or replace for each year from 2013 through 2042 (or the date by which all current meters are expected to be replaced).

If you do not currently have such a retirement schedule, please estimate what one might be by adding your estimated operating life to the installation date of your current meters. If you have a specific meter retirement schedule that deviates from this methodology, then please present the retirement estimates from your schedule and describe how it was developed.

Ideally, we would like to be able to fill in the following table:

Year	Number of Meters Retired (annual)	Number of Meters Retired (cumulative)	Percent of Meters Retired (annual)	Percent of Meters Retired (cumulative)
2013				
2014….				
2042				
Total				100%

Please provide the data by meter type (e.g., energy or demand), by customer size (e.g., up to 200 kW), or by customer class (e.g., R-4 and G2), to the extent that the information is relevant and available for your company.

Response:

Our FY 2014 work plan estimates the number of electric meter retirements to be approximately 22,000 Meters, which represents about 1.7% of our overall population. That number is expected to remain steady for the next 5-10 year period.

Our work plan is based upon a three year average as follows;

Demand (D) or Energy (E)	Retire 2010	Retire 2011	Retire 2012	Current Population	3 Year Avg Retire	Avg Retire as a % of Pop
D	2,667	2,181	3,235	44,925	2,694	6.0%
E	19,703	18,235	20,372	1,302,391	19,437	1.5%
Grand Total	22,370	20,416	23,607	1,347,316	22,131	1.6%

Our installed base of electric meters is sample tested each year for performance. Based upon the groups result, decisions are made as to disposition of meters being returned to our meter lab.

In general, our meter assets are managed as follows;

Firstly, it should be noted that National Grid removes approximately 30 – 35K meters per year for various reasons (damage, load change, vacant premises, etc…) in addition to those specifically removed as part of our Random Sample Test Program.

Meters removed as part of our sample program are tested, and the group's performance is calculated.

- If a meter group's performance is within acceptable limits, meters removed for various reasons are recertified in our lab and returned to service.
- If a meter groups performance begins to degrade, we will retire all meters of that type that are removed (for various reasons) when they arrive at our lab. We will continue to sample test this group and monitor its progress.
- As a meter group's performance continues to degrade, we will target that meter for field replacement as a tag along. This process instructs our field personnel to remove meters of a failing group whenever they are at a premise with one of these meters for any reason.
- Finally, when a meter population has been identified as reached the end of life, the meter population will be placed in a retirement group where service personnel will specifically target installations for replacement

While we estimate the useful life of a meter at 30 years, specific meter groups are expected to have a longer or shorter service life, while our asset strategy is based upon performance, meters entering our lab may be retired based upon asset age when they are considered nearing end of useful life, regardless of a group's performance.

2.2 Current meter replacement costs

In response to the first set of meter questions, each company explained that when a meter reaches the end of its useful life it is replaced with a "like" meter. Please provide an estimate of the average cost (per meter) of the like meters to be installed in 2013 (or the most recent year where cost data are available).

Please provide separately equipment costs, installation costs, and any other relevant costs.

Response:

Installation cost for an energy meter is estimated to cost $26.83 per meter. The cost of the meter is $52.

Installation cost for a demand meter is estimated to costs $150 per meter. The meter cost is $250 per meter.

2.3 Options for maintenance, replacement, or retirement of expired meters

Please describe the various options available to the company when a current meter fails or requires replacement (e.g., replacing end points, replacing other components, replacing the entire meter). Please describe the company's policy for choosing among these options, and explain which options are most frequently taken.

Response:

While certain meter types are modular in design, National Grid does not perform assembly replacement during our meter re-certification process. Meters are generally considered complete assemblies, and are recertified or retired as an entire unit. There are some exceptions to this policy; however they are generally limited to the more complex and costly meter types.

2.4 Provision of interval data to competitive suppliers

Please provide a timeline and description of the steps for a competitive supplier to receive interval data for a customer? Is a letter of authorization required or is enrollment sufficient? Is there a subscription fee (how much)? Is there a lag between provision of data to the supplier and to the ISO? Is the data provided through EDI or some other means?

Response:

Under M.D.P.U. No. 1171, suppliers may request access to a customer's interval data either on a one-time or subscription basis. There is no charge for the initial request within a calendar year for a customer's interval data that is provided on a one-time basis. Subsequent requests by either the same supplier or other suppliers are billed at a rate of $83 for a single service account with additional accounts on the same request billed $6.41 per account. A supplier may request an annual subscription to a customer's data, with their consent, that is billed at a rate of $154 for single service account with additional accounts on the same request billed $76.89 per account.

Suppliers are required to submit an Interval Data Request form that must be signed by the National Grid customer authorizing release of their interval data. Once the form is received by Meter Data Services via e-mail, the request is processed within three business days. Suppliers are sent an e-mail confirmation with instructions for accessing the data. Access to the interval data is provided via Energy Profiler Online (EPO) website: http://epo.schneider-electric.com/ngrid/cgi/eponline.exe.

Depending on the meter set-up, interval data is collected either daily or monthly, which determines the frequency that a customer's data is uploaded to EPO. For ISO reporting purposes, interval data is aggregated by supplier and submitted daily for settlement. For meters that are read monthly, a proxy load date (year back) is used for daily settlement. For resettlement 90 days later, actual load shapes are used.

2.5 Time Of Use Rates

Please provide the following information on your existing time of use rates.

- The number of customers by customer class on your TOU rates..
- Brief descriptions of the structure and charges of the TOU rates.
- Information on how TOU rate options are currently made available and marketed to customers.

Response:

- The number of customers by customer class on your TOU rates.

  Residential – Time-of-Use (Optional) R-4 – approx. 185 customers

  Time-of-Use (G-3) – approx. 3,000 customers

- Brief descriptions of the structure and charges of the TOU rates.
- National Grid offers two time-of-use rates, Residential – Time-of-Use (Optional) R-4 for residential customers and Time-of-Use (G-3) for commercial and industrial customers. Each rate has customer charges and energy charges. Rate G-3 also features a demand charge as well. The time-of-use structure was designed during restructuring to maintain the 10% savings guarantee required in the legislation enabling restructuring of the electric industry. As such, the "standard offer" rate or currently basic service was held constant and the energy charge differentials at the time were designed into the distribution energy charges. Peak and Off-Peak Periods are as follows:
  - Peak hours are from 8:00 a.m. to 9:00 p.m. daily on Monday through Friday, excluding holidays.
  - Off-Peak hours are from 9:00 p.m. to 8:00 a.m. daily Monday through Friday, and all day on Saturdays, Sundays, and holidays.

  Current Peak and Off-Peak base distribution energy charges per kWh are as follows:

Rate	Peak	Off-Peak
R-4	$0.06644	$0.00582
G-3	$0.00753	$0.00000

- Information on how TOU rate options are currently made available and marketed to customers.

  Residential – Time-of-Use (Optional) R-4

  The Company distributes information to customers on an annual basis through bill inserts describing each of the Company's available tariffs. In addition, similar information is available on the Company's website.

  Time-of-Use (G-3)

All commercial/industrial customers who meet the following criteria will receive delivery service on Rate G-3.

Electric delivery service under this rate is available for all purposes, subject to the provisions of this section. A new Customer will begin delivery service on this rate if the Company estimates that its average use will exceed 200 kW of Demand. A Customer may be transferred from rate G-3 at its request if the customer's 12 month average monthly demand is less than 180 kW of Demand for 3 consecutive months. A Customer may be transferred from rate G-3 at the option of the Company if the Customer's 12 month average monthly demand is less than 180 kW of Demand for 3 consecutive months.

MA DPU Grid Modernization Working Group

Questions for Utilities Regarding Current Meter Practices

Second Set

March 6, 2013

2.1 Estimated retirement schedule of current meters

Please expand upon the data provided in response to the first set of meter questions, by providing your best estimate of the number of meters that your company expects to retire and/or replace for each year from 2013 through 2042 (or the date by which all current meters are expected to be replaced).

If you do not currently have such a retirement schedule, please estimate what one might be by adding your estimated operating life to the installation date of your current meters. If you have a specific meter retirement schedule that deviates from this methodology, then please present the retirement estimates from your schedule and describe how it was developed.

Ideally, we would like to be able to fill in the following table:

Year	*Number of Meters Retired (annual)*	*Number of Meters Retired (cumulative)*	*Percent of Meters Retired (annual)*	*Percent of Meters Retired (cumulative)*
2013				
2014….				
2042				
Total				*100%*

Please provide the data by meter type (e.g., energy or demand), by customer size (e.g., up to 200 kW), or by customer class (e.g., R-4 and G2), to the extent that the information is relevant and available for your company.

WMECO and NSTAR Electric do not maintain a retirement schedule by year. Exhibit 2-1 is based on the original installation date and assumes a 20 year useful life.

Actual retirements will vary based on a variety for factors. NSTAR Electric has a life-cycle replacement program to replace meters as the meters approach the end of operable life. This serves to 'levelize' the number of annual replacements, relative to the peaks and valleys shown in Exhibit 2-1. WMECO also utilizes replacement programs based upon in-service testing performance analysis. In addition, a certain number of meters fail each year which require off-cycle replacements.

2.2 Current meter replacement costs

In response to the first set of meter questions, each company explained that when a meter reaches the end of its useful life it is replaced with a "like" meter. Please provide an estimate of the average cost (per meter) of the like meters to be installed in 2013 (or the most recent year where cost data are available).

Please provide separately equipment costs, installation costs, and any other relevant costs.

Please see Exhibit 2-2 for estimated costs.

2.3 Options for maintenance, replacement, or retirement of expired meters

Please describe the various options available to the company when a current fails or requires replacement (e.g., replacing end points, replacing other components, replacing the entire meter). Please describe the company's policy for choosing among these options, and explain which options are most frequently taken.

Because the meters in use at WMECO and NSTAR Electric are integrated units, they contain the communications circuitry built into the meter. The integration of all components in the meter drives the cost per unit down. However it also means that the Companies only replace the meter itself, not individual parts. In addition, these meters are not able to be retrofitted.

2.4 Provision of interval data to competitive suppliers

Please provide a timeline and description of the steps for a competitive supplier to receive interval data for a customer? Is a letter of authorization required or is enrollment sufficient? Is there a subscription fee (how much)? Is there a lag between provision of data to the supplier and to the ISO? Is the data provided through EDI or some other means?

NSTAR Electric

Suppliers can request Interval data either via a web-based communication tool called Issue Tracker (AdminiTrack) (https://issuetrack1.adminitrack.com), or by submitting the Massachusetts Interval Data Request form via e-mail or fax to NSTAR Electric (see Exhibit 2-4A for a copy of this form). Once a request for interval load data and all other appropriate documentation is received[1], NSTAR Electric will extract the appropriate interval data and e-mail the results to the supplier within 24 hours.

As detailed in Exhibit 2-4A, there are two options available to suppliers for requesting this data:

(1) For a one-time request, there is no charge for the first request in a calendar year; each additional request is $36.64 per request and account.

(2) Suppliers may select a yearly subscription option for $161.64 per account per year if they wish to receive monthly interval load data automatically. Suppliers who elect this option may also choose to receive the monthly interval load data via a FTP folder, rather than via email. In this case, monthly data will automatically be added to the folder as it becomes available.

WMECO

Interval load data requests are submitted to WMECO via a secured website, Energy Profile Online ("EPO"). EPO is a secured website that stores, displays, and analyzes interval load data and also provides the ability to download data for use in MS-Excel or other software applications. There are two options for requesting this data (also detailed in Exhibit 2-4A);

(3) For a one-time request, all available interval data would be provided for a charge of $50 per account requested. For this option the user id and password would automatically expire after 30 days. Within that time, all functions in EPO are available and the data could be accessed ad hoc. Data is not updated within that period.

[1] In addition to the Interval Data Request form, a Letter of Authorization is required in the event a supplier is requesting interval data for an account that supplier does not serve.

(4) The second option is an annual subscription at a cost of $300 per account per year. For this option, data is updated daily or as often as it's collected (which can be monthly for manually-read meters). The subscription automatically renews each year.

See Exhibit 2-4B for a blank copy of the form utilized by WMECO.

The provision of hourly data to the ISO-NE is in accordance with the applicable FERC approved Market Rule 1. This hourly data is reported to the ISO-NE by 1 p.m. on the second business day. Resettlement data is then reported in accordance with the applicable ISO-NE timelines for each subsequent resettlement (i.e. by day 99 following the affected calendar month). This data is also provided by the Company and the ISO-NE to the suppliers as it becomes available.

For 2013, the reporting timeline for resettlements can be found at the following location (Data Reconciliation and Meter Data Error Request for Billing Adjustments (MDE RBA)):

http://www.iso-ne.com/stlmnts/deadlines/2013_mtr_restle_deadlines.pdf

Typically, the hourly data provided to the ISO-NE reflects an hourly "Load Asset" value comprised of the estimated hourly load of all retail customers served by a specific supplier, as opposed to providing data for a single end use customer meter.

2.5 Time of Use Rates

Please provide the following information on your existing time of use rates.

- ***The number of customers by customer class on your TOU rates..***
- ***Brief descriptions of the structure and charges of the TOU rates.***
- ***Information on how TOU rate options are currently made available and marketed to customers.***

NSTAR Electric

- ***The number of customers by customer class on your TOU rates..***

As of February 2013, the number of customers for each of the NSTAR Electric TOU rate classes is shown below.

RATE	CLASS	BECO	CAMB	COM	TOTAL
Smart Grid CPP	Residential	902			902
R-4	Residential	104	NA	NA	104
R-5	Residential	NA	2	NA	2
R-6	Residential	NA	1	37	38
G-2	C&I	NA	414	463	877
G-3	C&I	479	70	81	151
G-4	C&I	NA	27	NA	27
G-6	C&I	NA	0	NA	0
G-7	C&I	NA	NA	274	274
G-7S	C&I	NA	NA	87	87
T-1	C&I	14	NA	NA	14
T-2	C&I	2,802	NA	NA	2,640
Total		4,301	514	942	5,116

- ***Brief descriptions of the structure and charges of the TOU rates.***

NSTAR Electric offers mandatory TOU rates (Rate G-3 in the Boston Edison (BECO) territory and Rates G-2 and G-3 in the Cambridge Electric (CAMB) and Commonwealth Electric (COM)

territories. These rates are available to NSTAR Electric's largest customers where the customer is taking service at 13.8/14 kV (BECO) or has monthly demand in excess of 100 kW (CAMB and COM). Smaller general service customers have optional TOU rates available in all three service territories. Optional TOU rates are also available to residential customers in all three service territories. In the BECO territory, there is also a Smart Grid pilot program that is available to certain residential customers.[2]

NSTAR Electric's TOU periods vary by service territory. In the BECO territory, TOU periods vary by season. During the summer months of June through September, the peak period is defined as the hours from 9 a.m. to 6 p.m. weekdays. During the winter months of October through May, the peak period is from 8 a.m. to 9 p.m. weekdays. All other hours are considered off peak including 12 Massachusetts holidays.

In the CAMB and COM territories, there are three TOU periods – Peak, Low A, and Low B.[3] The definition of peak hours changes seasonally based on daylight savings. When Eastern Daylight Savings time is in effect, the peak period is from 9 a.m. to 6 p.m. weekdays. When Eastern Standard time is in effect, the peak period is from 4 p.m. to 9 p.m. weekdays. Low Load Period A is defined as all hours not included in the Peak Load Period or Low Load Period B. Low Load Period B, during both Eastern Daylights and Eastern Standard time, is defined as the period beginning at 10 p.m. and ending at 7 a.m. weekdays and all hours on Saturday and Sunday.

NSTAR Electric's mandatory TOU rates have a two part structure consisting of both a "per kW/kVa" and "per kWh" rate. In the BECO territory, billing demand is measured as the maximum 15-minute demand (either kW or 90% of kVa), except any demand recorded during the off peak hours is discounted by 70 percent. Billing demand is established as the highest 15-minute kVa demand during the peak period in both the COM and CAMB territories. Demand charges are applied to the distribution, transition and transmission components of service depending on the rate. Per kWh rates for these classes are not time differentiated with the exception of the COM territory. Under the Company's optional TOU rates there is mixture of rate designs. Some have two part rates. Some have no demand charges. A summary of current TOU prices for each of NSTAR Electric's rate classes is provided below.

[2] The pilot is currently limited to certain towns, but may be expanded.

[3] In Cambridge, the rate design originally account three TOU periods, but that differentiation has been eliminated since unbundling. Only G-6 retains TOU characteristics on an energy basis and that's strictly on a peak and off peak basis (two time periods). Off Peak covers both Low A and Low B hours.

Boston Edison				
Rate Schedule	TOU Service Component	Demand	Energy	
		Peak	Peak	Off-peak
		($/kW)	($/kWh)	($/kWh)
Rate R-4	Distribution (Winter)	n/a	$ 0.06588	$ 0.03249
	Distribution (Summer)	n/a	$ 0.11985	$ 0.03352
	Transmission (Winter)	n/a	$ 0.05500	$ -
	Transmission (Summer)	n/a	$ 0.07264	$ -
Rate G-3	Distribution (Winter)	$ 8.86	$ 0.00880	$ 0.00880
	Distribution (Summer)	$ 14.83	$ 0.00880	$ 0.00880
	Transition (Winter)	$ 2.73	$ 0.00312	$ 0.00312
	Transition (Summer)	$ 2.73	$ 0.00312	$ 0.00312
	Transmission (Winter)	$ 7.37	$ -	$ -
	Transmission (Summer)	$ 7.37	$ -	$ -
Rate T-1	Distribution (Winter)	n/a	$ 0.08301	$ 0.02814
	Distribution (Summer)	n/a	$ 0.16644	$ 0.03008
	Transmission (Winter)	n/a	$ 0.03826	$ -
	Transmission (Summer)	n/a	$ 0.08071	$ -
Rate T-2	Distribution (Winter)	$ 11.43	$ 0.00880	$ 0.00880
	Distribution (Summer)	$ 19.88	$ 0.00880	$ 0.00880
	Transition (Winter)	$ 1.66	$ 0.00465	$ 0.00465
	Transition (Summer)	$ 1.66	$ 0.00465	$ 0.00465
	Transmission (Winter)	$ 7.08	$ -	$ -
	Transmission (Summer)	$ 7.08	$ -	$ -

Cambridge				
Rate Schedule	TOU Service Component	Demand	Energy	
		Peak	Peak	Off Peak
		($/kVa)	($/kWh)	($/kWh)
Rate R-5	Distribution	n/a	$ 0.11153	$ 0.02970
	Transmission	n/a	$ 0.04859	$ -
Rate R-6	Distribution	n/a	$ 0.14213	$ 0.03535
	Transmission	n/a	$ 0.09610	$ -
Rate G-2	Distribution <=100 kVA	$ 4.06	$ 0.01814	$ 0.01814
	Distribution >100 kVA	$ 5.03	$ 0.01814	$ 0.01814
	Transition <=100 kVA	$ 1.27	$ (0.00162)	$ (0.00162)
	Transition >100 kVA	$ 1.27	$ (0.00162)	$ (0.00162)
	Transmission <=100 kVA	$ 4.16	$ -	$ -
	Transmission >100 kVA	$ 8.54	$ -	$ -
Rate G-3	Distribution <=100 kVA	$ -	$ 0.01192	$ 0.01192
	Distribution >100 kVA	$ 4.32	$ 0.01192	$ 0.01192
	Transition <=100 kVA (1)	$ 237.00	$ (0.00172)	$ (0.00172)
	Transition >100 kVA	$ 1.68	$ (0.00172)	$ (0.00172)
	Transmission <=100 kVA (1)	$ 273.25	$ -	$ -
	Transmission >100 kVA	$ 5.24	$ -	$ -
Rate G-4	Distribution	$ 4.16	$ 0.01905	$ 0.01905
	Transition	$ 0.61	$ -	$ -
	Transmission	$ 5.90	$ -	$ -
Rate G-6	Distribution	n/a	$ 0.07208	$ 0.03200
	Transmission	n/a	$ 0.06879	$ -

(1) Demand charge is a flat charge (not volumetric)

Commonwealth					
Rate Schedule	TOU Service Component	Demand	Energy		
		Peak	Peak	Low A kWh	Low B kWh
		($/kVa)	($/kWh)	($/kWh)	($/kWh)
Rate R-6	Distribution	n/a	$ 0.15731	$ 0.02284	$ 0.02284
	Transmission	n/a	$ 0.01703	$ 0.01703	$ 0.01703
Rate G-2	Distribution	1.53	$ 0.02826	$ 0.02543	$ 0.02016
	Transmission	5.65	$ 0.00203	$ 0.00203	$ 0.00203
Rate G-3	Distribution	$ 0.88	$ 0.02294	$ 0.02194	$ 0.01840
	Transition	$ 3.00	$ 0.02284	$ 0.02284	$ 0.02284
	Transmission	$ 6.69	$ -	$ -	$ -
Rate G-7	Distribution	$ 3.35	$ 0.03344	$ 0.02655	$ 0.02655
	Transmission	$ 5.65	$ -	$ -	$ -
Rate G-7S	Distribution	$ 3.39	$ 0.05528	$ 0.04815	$ 0.04815
	Transmission	$ 2.39	$ -	$ -	$ -

With the exception of certain customers enrolled in the Smart Grid pilot, the Company's standard offer generation supply rate ("Basic Service") does not vary by TOU period (time-of-day). However, customers may select Basic Service at rates that are either the same across multiple months (fixed option) or that change every month (variable option). The variable option provides seasonal variation in generation supply rates during the year.

Residential customers under the dynamic pricing portion of the BECO Smart Grid pilot have a TOU rate where the basic service price is time differentiated. This pilot rate has unique TOU periods and pricing. During the summer months of June through September, the peak period is defined as the hours between 12 noon to 5 p.m. weekdays. During the winter months of October through May, the peak period is from 4 p.m. to 9 p.m. weekdays. All other hours are considered off peak including 12 Massachusetts holidays. NSTAR Electric can also call a critical peak period for up to five hours of duration for up to 12 instances during a 12-month period. The basic service rate for Smart Grid dynamic pricing customers is differentiated as follows: 2.23 times the applicable rate (Peak), 0.60 times the applicable rate (Off-Peak), and 10.62 times the applicable rate (Critical Peak).

- ***Information on how TOU rate options are currently made available and marketed to customers.***

Each year all customers receive an "Electric Rates" insert that not only lists the line items appearing on their bills for that year, but also includes a summary of each available rate and its availability. Rate options are also made available on NSTAR Electric's website. For NSTAR Electric's Smart Grid pilot, there was a targeted marketing campaign to enroll customers. The pilot, however, encompassed a variety of approaches to demand side management from direct load control to peak time rebates. Customers were randomly assigned to an approach.

<u>WMECO</u>

- ***The number of customers by customer class on your TOU rates.***

The average number of customers for each of the WMECO TOU rate classes in 2012 is as follows:

Rate Class	Average Customers
T-0	8
T-2	225
T-4	16
T-5	18
Total	267

- ***Brief descriptions of the structure and charges of the TOU rates.***

The Company offers mandatory TOU rates (Rate T-2 and T-5) for customers whose monthly peak demand is 350 kW and above, and optional TOU rates (Rate T-0 and T-4) for customers whose monthly peak demand is below 350 kW.

The Company's peak TOU period is 12 noon to 8 pm, weekdays; all other hours are off peak. Under each TOU rate class there are per kWh TOU rates for the distribution and transition (i.e., stranded) components of service, and a per kW TOU rate for the distribution component of service. The mandatory TOU rate classes also have a per kW TOU rate for the transmission component of service. The per kW rate for each of these components of service is applied to the maximum demand during the peak period of the month, with no charge for demand incurred during the off-peak period. A summary of current TOU prices for each of these rate classes is provided below.

Summary of WMECO TOU Rate Components [1]

Rate Schedule	TOU Service Component	Demand	Energy	
		Peak[2]	Peak[2]	Off-Peak[2]
		($/kW)	($/kWh)	($/kWh)
T-0	Distribution[3]	10.21	0.00284	0.00076
	Transition	n/a	0.02149	0.00224
T-4	Distribution[3]	8.60	0.00267	0.00076
	Transition	n/a	0.02022	0.00228
T-2	Distribution	7.00	0.00257	0.00076
	Transition	n/a	0.01795	0.00238
	Transmission	5.19	n/a	n/a
T-5	Distribution	4.54	0.00257	0.00076
	Transition	n/a	0.01833	0.00236
	Transmission	4.45	n/a	n/a

1. For rates that vary on a time-of-day basis

2. Peak periods are 12 noon through 8 p.m. E.S.T., weekdays (including holidays); all other hours are off-peak

3. T-0: No charge for 1st 2 kW; T-4: Rate for 1st 50 kW of demand = $1.83/kW

For all rate classes the Company's standard offer generation supply rate ("Basic Service" rate) does not vary by TOU period (time-of-day) during a month. However, customers may select Basic Service at rates that are either the same across multiple months (fixed option) or that change every month (variable option). The variable option provides seasonal variation in generation supply rates during the year.

- ***Information on how TOU rate options are currently made available and marketed to customers.***

Given that TOU rates are mandatory for customers under Rates T-2 and T-5 and the fact that there are no residential TOU rates, there is limited marketing of optional TOU rates. Rate options may be provided to customers in bill inserts, and are also made available on the Company's website at:

http://www.wmeco.com/Residential/UnderstandBill/RatesRules/Default.aspx?sec=AW.

In addition, the Company presents and discusses TOU rates at customer forums and information sessions.

NSTAR Electric
Meter Retirement Schedule
Assume retirement 20 years from installation

Year	# of Mtrs Retired Annual	# of Mtrs Cumul Ret	% of Mtrs Ret	% of Mtrs Retired Cumul
2013	5,357	5,357	0%	0%
2014	11,066	16,423	1%	1%
2015	13,699	30,122	1%	3%
2016	122,966	153,088	10%	13%
2017	52,349	205,437	4%	17%
2018	9,192	214,629	1%	18%
2019	40,362	254,991	3%	22%
2020	6,439	261,430	1%	22%
2021	5,373	266,803	0%	23%
2022	38,442	305,245	3%	26%
2023	27,539	332,784	2%	28%
2024	183,934	516,718	16%	44%
2025	161,686	678,404	14%	58%
2026	267,804	946,208	23%	81%
2027	26,734	972,942	2%	83%
2028	25,466	998,408	2%	85%
2029	20,327	1,018,735	2%	87%
2030	46,441	1,065,176	4%	91%
2031	57,447	1,122,623	5%	96%
2032	51,960	1,174,583	4%	100%

*Note WMECO and NSTAR Electric do not maintain a retirement schedule by year.
This schedule is based on the original installation date and assumes a 20 year useful life.
Actual retirements will vary based on a variety for factors.

WMECO
Meter Retirement Schedule
Assume retirement 20 years from installation

Year	# of Mtrs Retired Annual	# of Mtrs Cumul Ret	% of Mtrs Ret	% of Mtrs Retired Cumul
2013	2,117	2,117	1%	1%
2014	9,119	11,236	4%	5%
2015	27,193	38,429	12%	16%
2016	24,742	63,171	11%	27%
2017	11,253	74,424	5%	32%
2018	7,631	82,055	3%	35%
2019	6,121	88,176	3%	38%
2020	17,807	105,983	8%	45%
2021	39,007	144,990	17%	62%
2022	28,863	173,853	12%	75%
2023	15,763	189,616	7%	81%
2024	5,820	195,436	2%	84%
2025	4,647	200,083	2%	86%
2026	4,588	204,671	2%	88%
2027	5,474	210,145	2%	90%
2028	7,079	217,224	3%	93%
2029	3,943	221,167	2%	95%
2030	5,424	226,591	2%	97%
2031	4,091	230,682	2%	99%
2032	2,468	233,150	1%	100%

*Note WMECO and NSTAR Electric do not maintain a retirement schedule by year.
This schedule is based on the original installation date and assumes a 20 year useful life.
Actual retirements will vary based on a variety for factors.

		NSTAR Electric			WMECO		
Meter Type	Communication	Cost/Meter	Installation Cost	Total Cost	Cost/Meter	Installation Cost	Total Cost
Energy – AMR -- ERT	Drive-by	$ 35	$ 38	$ 73	$ 35	$ 26	$ 61
Demand – AMR -- ERT	Drive-by	190	38	228	175	33	208
TOU (residential)	cellular/modem	600	78	678	350	26	376
TOU (C&I)	cellular/modem	600	78	678	655	242	897

For NSTAR Electric the above table reflects equipment and installation for the replacement a meter only. In some cases there could be additional equipment and labor costs. For instance, if the meter is a transformer-rated meter for services above a certain amperage, there will be additional equipment and installation costs for instrumented transformers to step the current down to an appropriate level.

In addition this reflects the highest volume of meters within each meter type. Within each type there are varyiations on the norm which have different associated costs.

MASSACHUSETTS INTERVAL DATA REQUEST FORM

This is to be completed by the Supplier/Broker

Distribution Company (circle one): NGRID NSTAR UNITIL WMECO

• Customer Name (as it appears on the bill): _____

Account Number	Service Address	Billing Name	Billing Address	City/State/Zip

Please attach additional accounts as needed, and reference accordingly in the table above with "see attached".

• Supplier/Broker Name: _____
• Supplier/Broker Contact: _____
• Supplier/Broker Contact Telephone Number: _____
• Supplier/Broker Contact Email Address: _____

***CHECK ONE □ Invoice the customer OR □ Invoice the supplier/broker as follows:
(Not applicable to NSTAR)

Supplier/Broker Signature: _____ Date: _____
Supplier Billing Address _____

This section is to be completed by the Customer

I authorize the above distribution company to share my interval data with the above supplier/broker until I or my supplier/broker notifies you otherwise[1]. The tariff allows for one request per account per calendar year for historical data at no charge. I understand that a fee will be assessed for any subsequent request made within the calendar year. Please accept this request for information under the authority of this form as if the request was made directly to you. You are permitted to accept this form as authentic whether it is the original executed document or a copy thereof. My signature affirms that I have the authority to make and sign this request on behalf of my company.

*Customer Signature _____
*Printed Name _____
*Title _____
*Company Name _____
*Date _____

Massachusetts tariff allows for one request per account per calendar year for historical data at no charge. If available, I would like to exercise that option now: □ YES □ NO

SEE ATTACHED FEE SCHEDULE

[1] Signatures for historical requests are only valid for one year after the sign date.

NGRID **Fax To Load Data Services (508) 389-3230**

Historical request for Interval Data:

- Initial Request – covering a single calendar year ☐ **No Charge**

Subsequent historical request within same calendar year

- Single Retail delivery service account ☐ **$69.00**
- Additional retail delivery service account – requested at same time
  $23.00 per account x # of accounts (_____) ☐ _____

Subscription Service for Interval Data over the Internet:

- Single retail delivery service account ☐ **$321.00**
- Additional retail delivery service account – requested at same time
  $275.00 per account x # of accounts (_____) ☐ _____

***CIRCLE ONE 1 Year Contract OR Automatic Yearly Renewal

Total Charges $_____

NSTAR **Please attach as a pdf in the Issue Tracker or Fax To Interval Data Services (781) 441-3690**
NSTAR will invoice the supplier/broker only, not the customer.

Historical request for Interval Data:

- Initial Request – covering a single calendar year ☐ **No Charge *****

Subsequent historical request within same calendar year

- **$36.64** per account x # of accounts (_____) ☐ _____

Subscription Service for Interval Data over the Internet:

- **$161.64** per account x # of accounts (_____) ☐ _____

Automatic Yearly Renewal

Total Charges $_____

WMECO **Submit requests to NU Meter Operations Support by fax 860-665-2069, or by pdf to metersvcs@nu.com.**

WMECO/CL&P will provide interval meter data via an access-protected web site. The service period begins the first business day after email notification of the availability of the EPO service. WMECO or CL&P may, at our discretion, cancel this agreement and return the unused pro-rated portion of fees received.

Historical request, $50 per account

All interval data available at the time of the request will be provided online. Data will not be updated. The user id and password will expire 30 days after the start of the service.

Annual subscription, $300 per account per year

All interval data available at the time of the request will be provided online. For phone-accessed meters, data will be updated daily. For manually-read meters, data will be updated approximately once a month. The subscription automatically renews each year. Refunds are not issued for early cancellation.

UNITIL **Fax To (603) 227-4663**

Historical request for Interval Data:

Initial Request – covering a single calendar year **No Charge**

Subsequent historical request within same calendar year

Single Retail delivery service account **$49.26 per meter**

Additional retail delivery service account
(Please attach list of accounts)
$49.26 per meter x # of accounts $_____

Annual Subscription

Single retail delivery service account $346.92 per meter

Total Charges $_____

Northeast Utilities System

107 Selden Street, Berlin, CT 06037
Northeast Utilities Service Company
P.O. Box 270
Hartford, CT 06141-0270
(860) 665-5000

MDATA Online – EPO Energy Profiler Online ~ Service Agreement

WMECO/CL&P will provide interval meter data via an access-protected web site. At least one interval-recording meter is required per account. WMECO, CL&P, and any third party contracted by WMECO or CL&P will not disclose any customer-confidential information - including customer name and address, metering, billing and pricing, power usage, business activities, and other customer information - without prior consent from the customer. WMECO or CL&P may, at our discretion, cancel this agreement and return the unused pro-rated portion of fees received. Upon receipt of the completed Service Agreement, data will be provided within 2 business days. Additional time may be needed for large requests.

The MDATA/EPO Service is not intended for billing comparison purposes. If you would like assistance understanding how this data compares to your bill, please contact Meter Operations Support at 1-860-665-6150.

Service Options – select one:

☐ **One-Time request, $50 per account number**
All interval data available at the time of the request will be provided online. Data will not be updated. The user id and password will expire 30 days after the start of the service.

☐ **Annual subscription, $300 per account number per year**
All interval data available at the time of the request will be provided online. For phone-accessed meters, data will be updated daily. Data may be delayed due to meter or communication difficulties. The subscription automatically renews each year.

****CL&P accounts are subject to a 1% sales tax charge per account which will be added to the fee. If exempt from sales tax, a copy of the Sales & Use Tax Resale Certificate or CT Tax Exempt Certificate must accompany Service Agreement.****

Customer Information and Authorization:

The utility customer's dated signature, email address, and phone number must be provided on this service agreement before any data will be released. Authorization from an agent on behalf of the utility customer will NOT be accepted. **This Service Agreement must be received by the Utility within three (3) months of the date signed by the customer to be valid.**

Contact Name (Please print) _____

Customer's Name & Title (Please print) _____

Email Address (Please print) _____ **Phone Number**_____

Customer's Signature (Please print) _____ **Date signed by customer** _____

***For customers requesting data please complete billing information below*

Utility Customer Account Number(s) BA & SA

1. BA	**SA**	**6.BA**	**SA**
2. BA	**SA**	**7.BA**	**SA**
3. BA	**SA**	**8.BA**	**SA**
4. BA	**SA**	**9.BA**	**SA**
5. BA	**SA**	**10.BA**	**SA**

*** Please attach account numbers or include electronic list if requesting more then 10 accounts*

Requestor & Billing Information:

The service period begins the first business day after email notification of the availability of the MDATA/EPO service. The Utility customer cannot be billed for a third party request.

Requestor/Billing Company (Please print) _____

Requestor/Billing Name (Please print) _____

Phone Number _____ **Email Address** (Please print) _____

Billing Address _____ **P.O. Number** (optional) _____

_____

Requestor/Billing Signature _____ **Dated Signed by Requestor/Billing Co.**_____

***** RETURN COMPLETED AGREEMENT TO NU METER OPERATIONS SUPPORT *****
By fax 860-665-2069, by pdf to meteroperations@nu.com