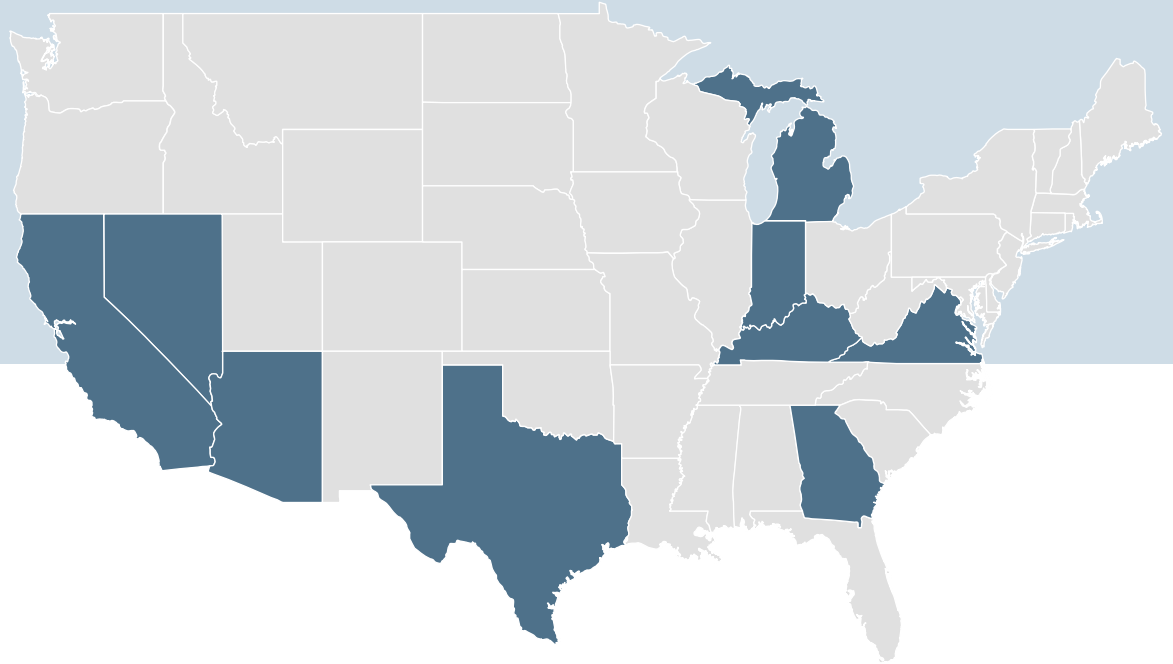


Volume II: Summer 2012



northeast group, llc

United States Smart Grid: Utility Electric Vehicle Tariffs

Volume II: Summer 2012

July 2012 | www.northeast-group.com

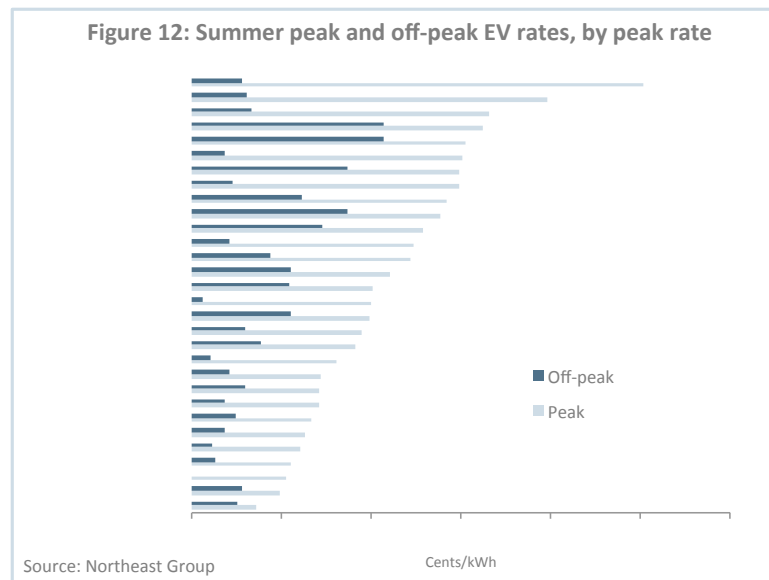
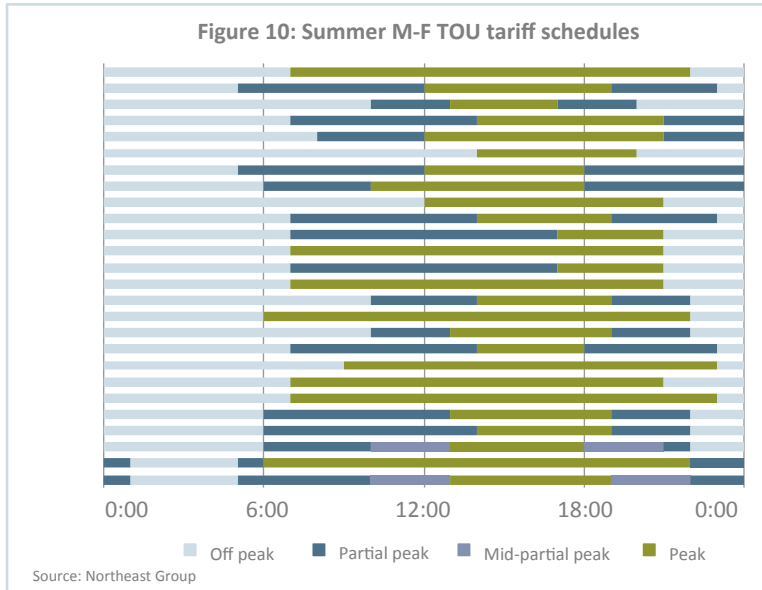
United States Smart Grid: Utility Electric Vehicle Tariffs (Volume II)

Electric utilities in the US are struggling with a number of challenges related to EVs, from determining which infrastructure upgrades may be required on their distribution systems to assessing which tariff structures are most effective. As the first wave of EVs hits the US market, utilities have begun launching EV tariffs. Northeast Group first published its benchmark and analysis of these EV tariffs and their implications for utilities and EV owners in July 2011. This second volume of the benchmark includes EV

tariffs from 14 new utilities, as well as additional analysis of the implications of these tariffs.

As of June 30th 2012, 22 utilities across the US have launched EV tariffs. Unsurprisingly, many of the utilities are located in California and Michigan. California utilities are at the forefront of several smart grid initiatives, while Michigan utilities are eager to support automobile manufacturers working on transitioning their production lines to EVs. Utilities included in this benchmark are located in the following states:

- **Alaska;**
- **Arizona;**
- **California;**
- **Georgia;**
- **Hawaii;**
- **Indiana;**
- **Kentucky;**
- **Michigan;**
- **Nevada;**
- **Texas;**
- **Virginia.**



Overall, electric vehicles are becoming increasingly popular, but even with tax rebates the upfront costs of electric vehicles are still higher than conventional vehicles. In order to make up the difference, EVs must offer even greater savings in fuel expenses, which is where EV tariffs will play a critical role. EVs are

cheaper to fuel compared with conventional vehicles, even under standard electricity tariffs. But customers fueling during off peak hours with EV tariffs can save even more, helping to reduce the payback period for electric vehicles. For electric vehicles to continue to grow in popularity, utilities will have to offer their customers attractive tariff options. EV penetration rates are highest in states with electric vehicle tariffs. Utilities and regulatory commissions across the country will need to increase the number of electric vehicle tariffs available in order to make EVs more attractive for customers.

Key questions answered in this report:

- Which utilities have favored time-of-use (TOU) rates vs. flat rates?
- How have utilities structured their electric vehicle TOU rates and what is the average peak to off-peak discount?
- What issues help determine whether to use single or second meters for EV tariffs?
- Which utility EV tariffs suit which driving profiles best?

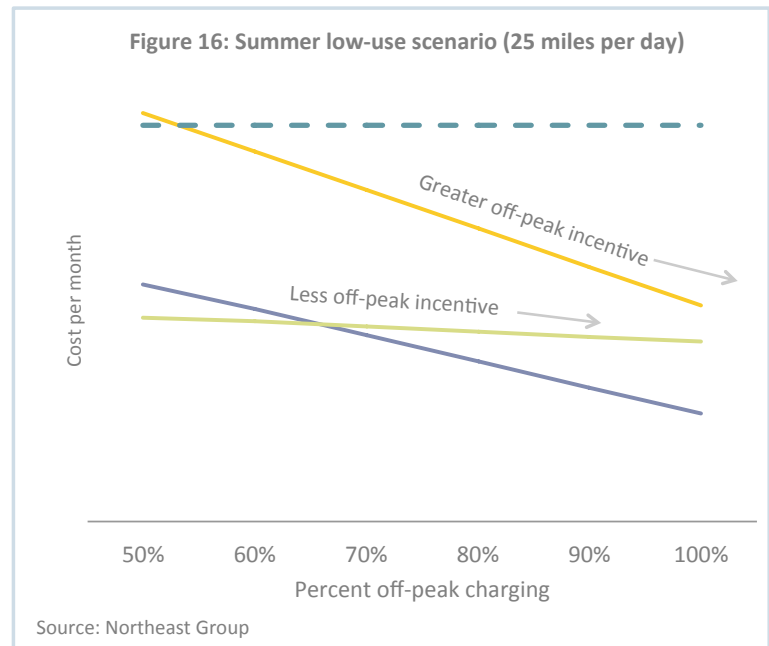


Table of Contents

1. Key findings	1
2. Background	1
3. The EV market and tariffs in 2012	3
4. Tariff structures: time-of-use and flat rate	5
4.1 TOU tariffs	6
4.2 Flat rate tariffs	6
4.3 Sliding scale tariff mechanisms	6
5. Issues related to tariff structures	8
5.1 Single meter or second meter	8
5.2 Comparison to non-EV TOU rates	11
5.3 Summer vs. winter rates	11
5.4 Public charging plans	12
6. Benchmark of US utility EV tariffs	12
6.1 EV TOU rates: peak and off peak	16

7. Scenario analysis: tariffs compared	16
7.1 How do these tariffs play out in various scenarios?	16
7.2 What do these scenarios reveal?	17
8. More EV tariffs on their way	21
9. Appendix: EV tariffs offered by US utilities in 2012	22

List of Figures

Figure 1: Locations of utilities with EV tariffs	2
Table 1: Cost comparison: Conventional vehicles vs. EVs in Georgia	3
Figure 2: Percentage of customers with access to EV tariffs	4
Figure 3: Percentage of utilities offering EV tariffs	4
Figure 4: Two main tariff structures	6
Table 2: List of utilities using each tariff structure	7
Figure 5: Tiered summer peak pricing at PG&E	8
Table 3: Utilities with whole house or 2 nd meter options	9
Figure 6: Annual savings from EV TOU rates as opposed to regular TOU rates (low use)	10
Figure 7: Annual savings from EV TOU rates as opposed to regular TOU rates (high use)	10
Figure 8: Summer off-peak discount	11
Figure 9: Winter off-peak discount	12
Figure 10: Summer M-F tariff schedules	13
Figure 11: Winter M-F tariff schedules	13
Figure 12: Summer peak and off-peak EV rates, by peak rate	14
Figure 13: Summer peak and off-peak EV rates, by off-peak rate	14
Figure 14: Winter peak and off-peak EV rates, by peak rate	15
Figure 15: Winter peak and off-peak EV rates, by off-peak rate	15
Figure 16: Summer low-use scenario (25 miles/day)	18
Figure 17: Summer high-use scenario (50 miles/day)	18
Figure 18: Winter low-use scenario (25 miles/day)	19
Figure 19: Winter high-use scenario (50 miles/day)	19

Order Form: Utility Electric Vehicle Tariffs (Volume II)

Pricing

Single user – \$699 | Enterprise license – \$999

Clients purchasing a single user license are limited to one user for this report. The enterprise license allows all employees within a single organization to view the report. Any forwarding or sharing of the report to others who have not paid for it is strictly forbidden.

Email orders: Fill out and scan the sheet below. Please email orders to **ben.gardner@northeast-group.com**

Telephone: We can be reached at **+1.202.538.0848**. Please have all of the information below ready to expedite your order.

Customer information

SINGLE USER ENTERPRISE LICENSE

NAME	POSITION	COMPANY	
ADDRESS			
CITY	STATE	POSTAL CODE	COUNTRY
TELEPHONE	EMAIL		

Credit card information

AMERICAN EXPRESS DISCOVER MASTERCARD VISA

CARD NUMBER	EXPIRATION DATE	CV CODE	
CARDHOLDER'S NAME	SIGNATURE	DATE	
BILLING ADDRESS			
CITY	STATE	POSTAL CODE	COUNTRY

By purchasing this report I agree to abide by the following terms and conditions: 1. Single-user license - use of this report is restricted to one individual. 2. Enterprise license – use of this report is restricted to individuals within a single enterprise or organization. I agree not to forward or share this report to others who have not paid for its use.