

Residential EV TOU Rate Design

Rate Design Revenue Requirements

Distribution		
	Total ¹	\$ 245,789,395
	Customer ²	<u>(87,272,856)</u>
	Volumetric ³	\$ 158,516,539
Transmission ³		\$ 94,695,072
Generation ³		\$ 208,417,217

Marginal Costs^{4,5}

MC Differentials

	Peak	Mid-Peak	Off-Peak	Peak to Mid-Peak	Mid-Peak to Off-Peak
	(\$/kWh)	(\$/kWh)	(\$/kWh)	(\$/kWh)	(\$/kWh)
Generation	0.08768	0.04702	0.03499	0.04066	0.01203
Distribution (system level) ⁶	0.00483	0.00069	0.00000	0.00414	0.00069
Transmission	0.07569	0.00894	0.00023	0.06675	0.00871

Rate Design TOU Periods and Billing Determinants

Peak Period: 2 pm - 7 pm, weekdays excluding holidays
Mid-Peak Period: 7 am - 11 pm, daily, excluding peak period hours
Off-Peak Period: All other hours

kWh Usage				Total
Peak	Mid-Peak	Off-Peak		
549,957,946	1,777,416,681	817,596,207	3,144,970,835	
17.5%	56.5%	26.0%		

MC-based Rate Design⁷

	Peak	Mid-Peak	Off-Peak	Rate Design	Peak/ Off-peak
	(\$/kWh)	(\$/kWh)	(\$/kWh)	Revenue Target	ratio
Distribution (system level) ⁶	0.06402	0.05988	0.02065	\$ 158,516,539	3.10
Transmission	0.08746	0.02070	0.01199	\$ 94,695,072	7.29
Generation	<u>0.10294</u>	<u>0.06229</u>	<u>0.05026</u>	\$ 208,417,217	<u>2.05</u>
Total	0.25442	0.14287	0.08290		3.07

Notes

- ¹ Total Rate R Revenue Requirement (approved by NH PUC in DE 19-057)
- ² Customer Charge Revenue (\$16.50/month, from Rate R-TOD customer charge, excluding local facilities marginal cost moved to peak/mid-peak volumetric rate)
- ³ Total revenue target for time differentiated volumetric rate design
- ⁴ Best fit analysis to combine distribution, transmission and generation marginal costs for designated peak and associated mid-peak and off-peak TOU periods
- ⁵ Marginal costs for distribution from marginal COS study in DE 19-057, for transmission from probability of peak analysis and generation from energy supply MC analysis
- ⁶ Local distribution costs included in peak/mid-peak volumetric rate components
- ⁷ Detailed calculations provided in Workpaper EAD-1

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RESIDENTIAL ELECTRIC VEHICLE RATE

AVAILABILITY

[TBD]

CHARACTER OF SERVICE

Service supplied under this rate will be single-phase, 60 hertz, alternating current, normally three-wire at a nominal voltage of 120/240 volts.

RATE PER MONTH

Customer Charge\$16.50 per month

Energy Charges:

Per Kilowatt-Hour

Distribution Charges:

On-Peak Hours (2:00 p.m. to 7:00 p.m.
weekdays excluding Holidays)2.065¢
Mid-Peak Hours (daily 7:00 a.m. to 11 p.m.,
excluding On-Peak Hours) 5.988¢
Off-Peak Hours (all other hours)6.402¢
Regulatory Reconciliation Adjustment....0.000¢

Transmission Charges:

On-Peak Hours (2:00 p.m. to 7:00 p.m.
weekdays excluding Holidays) 8.746¢
Mid-Peak Hours (daily 7:00 a.m. to 11 p.m.,
excluding On-Peak Hours) 2.070¢
Off-Peak Hours (all other hours) 1.199¢

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Energy Service Charges:

On-Peak Hours (2:00 p.m. to 7:00 p.m. weekdays excluding Holidays)	10.294¢
Mid-Peak Hours (daily 7:00 a.m.to 11 p.m., excluding On-Peak Hours)	6.229¢
Off-Peak Hours (all other hours)	5.026¢
Stranded Cost Recovery.....	0.844¢

ILLUSTRATIVE

**Residential EV Charging
TOU Rate Savings Estimate**

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	BEV 2021	PHEV 2021
Total Monthly Charge (kWh)	325	206
% Residential Charging	0.80	0.80
At Home Charging (kWh)	260	200
Distribution Off-Peak Charging Savings *	\$ 7.93	\$ 6.10
Transmission Off-Peak Charging Savings *	4.71	3.62
Energy Service Off-Peak Charging Savings *	4.16	3.20
Total Savings from Off-Peak Charging	\$ 16.81	\$ 12.93
Customer Charge	(16.50)	(16.50)
Net Savings	\$ 0.31	\$ (3.57)

3-Period Residential EV TOU Rate Summary

Customer Charge \$16.50 per month

Volumetric Rates (\$/kWh)

	<i>Proposed TOU Rates</i>			<i>Comparative Rates</i>	
	Off Peak	Mid-Peak	Peak	Rate R (all hours)	Price Δ *
Distribution	0.02065	0.05988	0.06402	0.05116	\$ 0.03051
Transmission	0.01199	0.02070	0.08746	0.03011	\$ 0.01812
Energy Service	0.05026	0.06229	0.10294	0.06627	\$ 0.01601
Total	0.08290	0.14287	0.25442	0.14754	\$ 0.06464

Time of Use Periods

Peak: Weekdays: 2 pm -7 pm (excl. holidays)
Mid-Peak: Weekdays: 7am-2pm and 7pm-11pm ;Weekends: 7am - 11 pm
Off-Peak: Daily, 11 pm - 7 am

Notes:
Distribution pricing reflects adjustment to implement a \$16.50/month customer charge with local facilities costs included in peak & mid-peak rates.

* Savings calculated from shifting 100% charging to off peakk, and difference between Rate R all hours and TOU off-peak rates.