

Gunnison County Electric Association

A Rural Utility Perspective:
EV's & EV Charging



Gunnison County Electric Association

A Touchstone Energy® Cooperative 

About GCEA

- Meters: 10,751
- Miles of line: 1,075
- Certificated service area: 3,520 sq. miles
- Established programs
 - Conservation & efficiency programs
 - Voluntary green power program
 - A few small renewable projects



Weather

- January temperatures
 - Average low -7°
 - Average high 25°
 - Record low -45°
- January 2017
 - 2 days with high temp of -1°



Weather

- Average snowfall
 - Crested Butte – 217"
 - Gunnison – 50"
 - Lake City – 80"
- 2016-2017 Winter
 - Gunnison – 72.2"
 - CB – 90" in 10 days
 - Resort – 335"



Distances from Gunnison

(with elevation change)

- Montrose – 65 miles (-1,900')
- Salida – 65 miles (-600')
- Crested Butte – 27 miles (+1,200)
 - Crested Butte to Paonia (seasonal) – 47 miles
- Lake City – 55 miles (+1,100')
 - Lake City to Creede – 50 miles



Why Promote EV's?

- Member benefit
 - Fuel savings (81 cents / gallon equivalent)
 - Environmental responsibility
- Environmental benefit
- Increase in kWh sales
 - As opposed to a decrease
 - Spread fixed costs over more kWh



Electric Vehicle Charging

- GCEA owns & operates 3 EV stations
 - All public
 - All level 2
 - Free charging for 3 years
- Actively engaged in efforts to expand charging infrastructure



EV Charging Stations

- Crested Butte (2)
 - November 30, 2015
 - YTD charging sessions = 209 (100% increase)
- GCEA headquarters
 - July 2016
- City of Gunnison (2)
 - September 14, 2016
- Lake City (2)
 - October 25, 2016
 - Remote / rural (pop. 392 / 813)



Promoting Electric Vehicles

- EV driving experience
 - Test drives
 - Week-long loans
- Education
 - First hand experience with 4 vehicles
- EV rally
- Open houses
- Gunnison car show
- Group presentations
- Discount + rebate on home chargers



Rural vs. Urban

- Someone living 1 mile outside city limits
 - Within about 3.5 miles of:
 - Work
 - 2 Grocery stores
 - 5 banks
 - 20+ restaurants
 - University
 - Public schools
 - Courthouse / government offices
 - Commercial airport
 - Church
 - Walmart
 - Etc.



Rural vs. Urban

- Average GCEA commute – 6.2 miles
- Longest GCEA commutes
 - 53 miles (once a week)
 - 23 miles daily

* Distances are one way



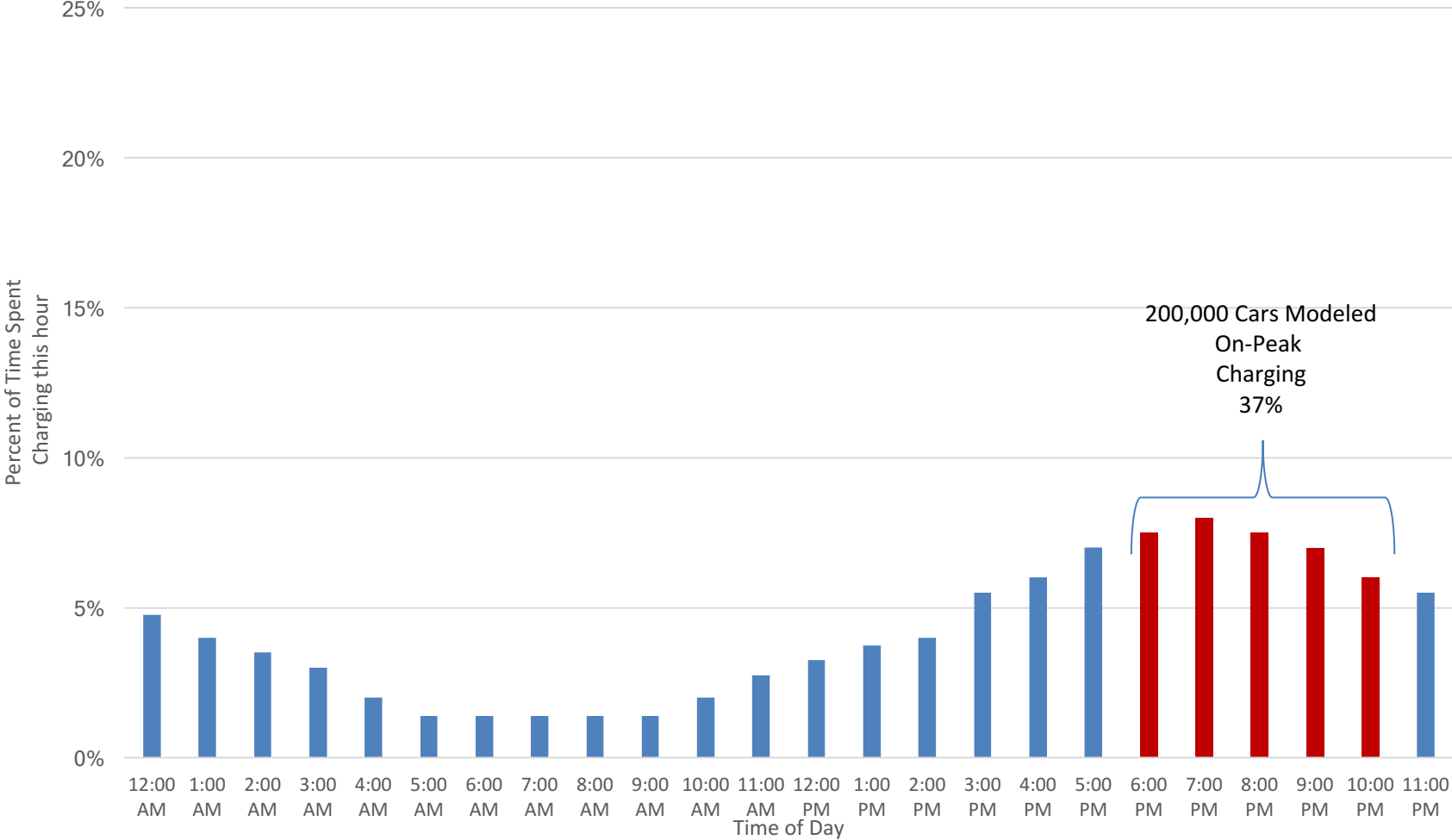
Opportunity with a Challenge

- Potential for increased kWh sales
 - Average EV usage
 - 100 – 200 kWh/month?
 - Average residential account: 665 kWh/mo.
- Potential environmental benefits
- Potential for savings by member
- Risk of significant costs when charging occurs “on peak”



Uncontrolled, Aggregate EV Charging Load Profile (CA, HI, TX, NY & MN)

Source: RMI



Home Charging

- EV charged off peak
 - Annual gross margin on energy sales @ 200 kWh/mo. = \$192
- EV charged on peak
 - Annual gross margin on energy sales @ 200 kWh/mo. = \$192
 - Annual wholesale peak demand charges to GCEA = \$511 (4 times on peak)



So What's the Net Effect?

Avg. Margins / Meter with EV Charging Off-Peak

	Per Year
Revenue	\$1,149
Cost of Power	-614
Oper. & Maint.	-182
All Other Expenses	<u>-318</u>
Oper. Margins	\$ 35
EV +/-	192
New Oper. Margins	\$ 227

Avg. Margins / Meter with EV Charging On-Peak (4x)

	Per Year
Revenue	\$1,149
Cost of Power	-614
Oper. & Maint.	-182
All Other Expenses	<u>-318</u>
Oper. Margins	\$ 35
EV +/-	\$ -319
New Oper. Margins	\$ -284



DC Fast Charging

- High Demand with lots of idle time
- Peak demand charges per coincident peak event
 - 25 kW - \$484
 - 50 kW - \$967
 - 120 kW - \$2,321
 - 340 kW - \$6,576
- Large transformer
- 480 volt / 3-phase
- Transformer losses



GCEA Strategy

- Encourage more electric vehicles.
- Expand the charging infrastructure.
- Encourage off-peak charging with effective rate signals and education.





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THANK YOU!

Mike McBride - mmcbride@gcea.coop