

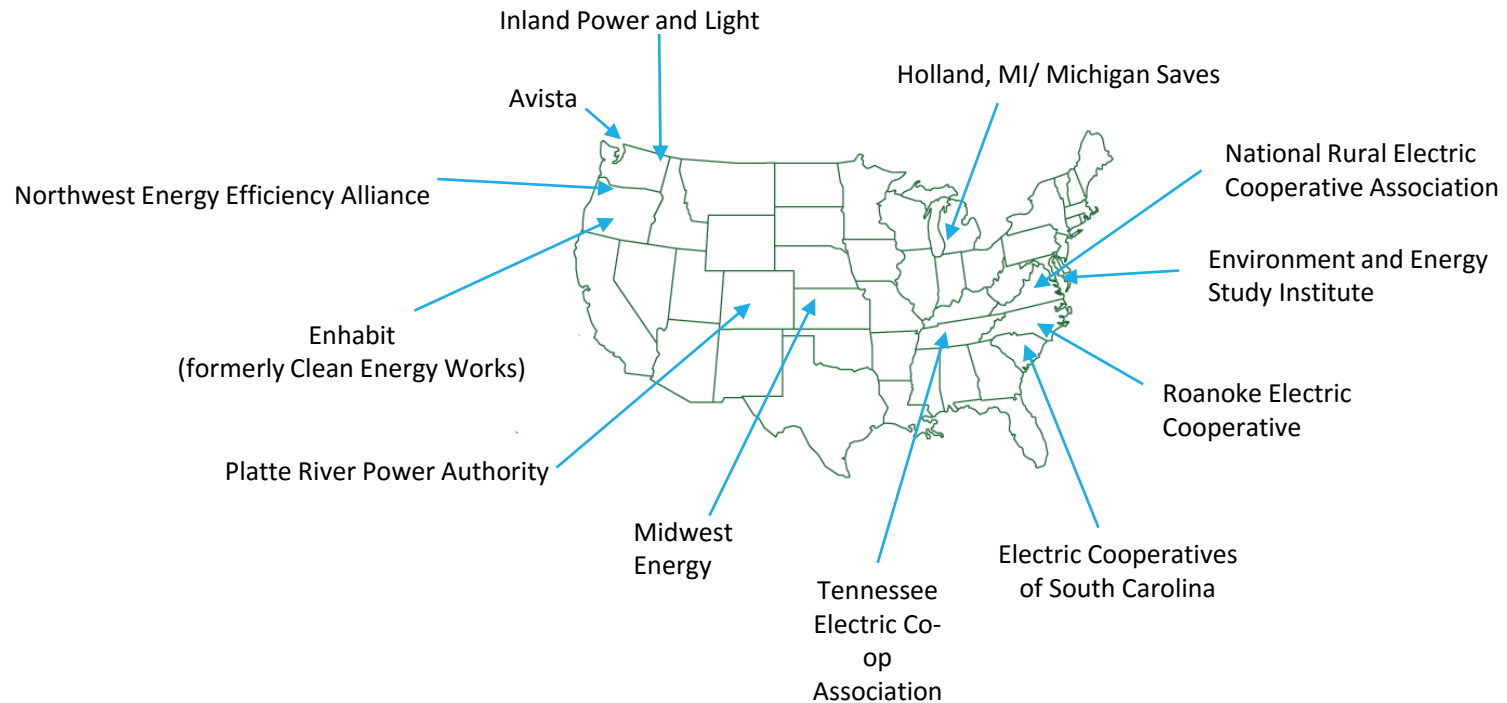
Characterizing the PEV Opportunity for Electric Utilities

EV ROADMAP 9

JULY 21, 2016



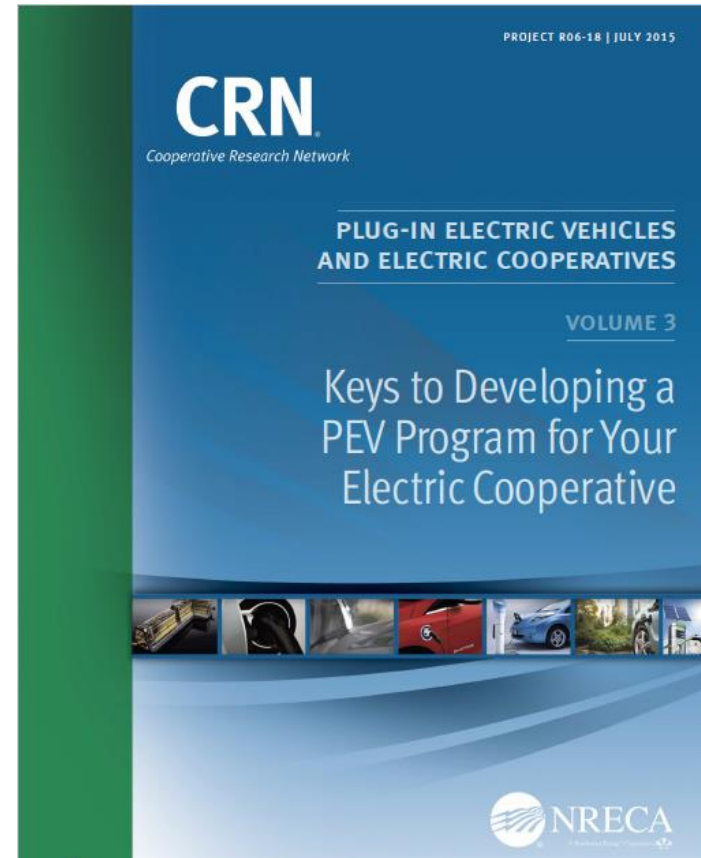
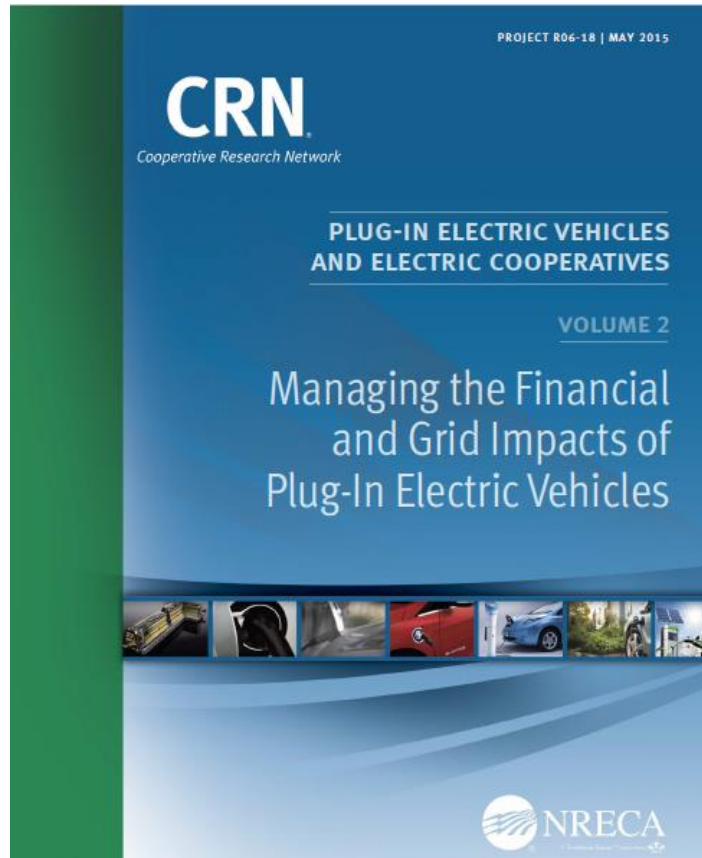
Collaborative Efficiency's Work



Presentation Overview

- Are PEVs an opportunity or threat to electric utilities?
- Key utility PEV considerations:
 - Customer satisfaction
 - Environmental benefits
 - Grid benefits
 - Financial benefits
 - Alignment with mission
- Pathways forward: Co-op or public utility role on PEVs

Our work on PEVs: Are PEVs an opportunity or threat to electric co-ops?



Customer Satisfaction



Customer Expectations of Utility

- A survey of consumers conducted by the Edison Electric Institute found that:

“almost two-thirds of respondents want their “utility [to] take a leadership role in encouraging a shift toward electric transportation.”

Total cost of ownership

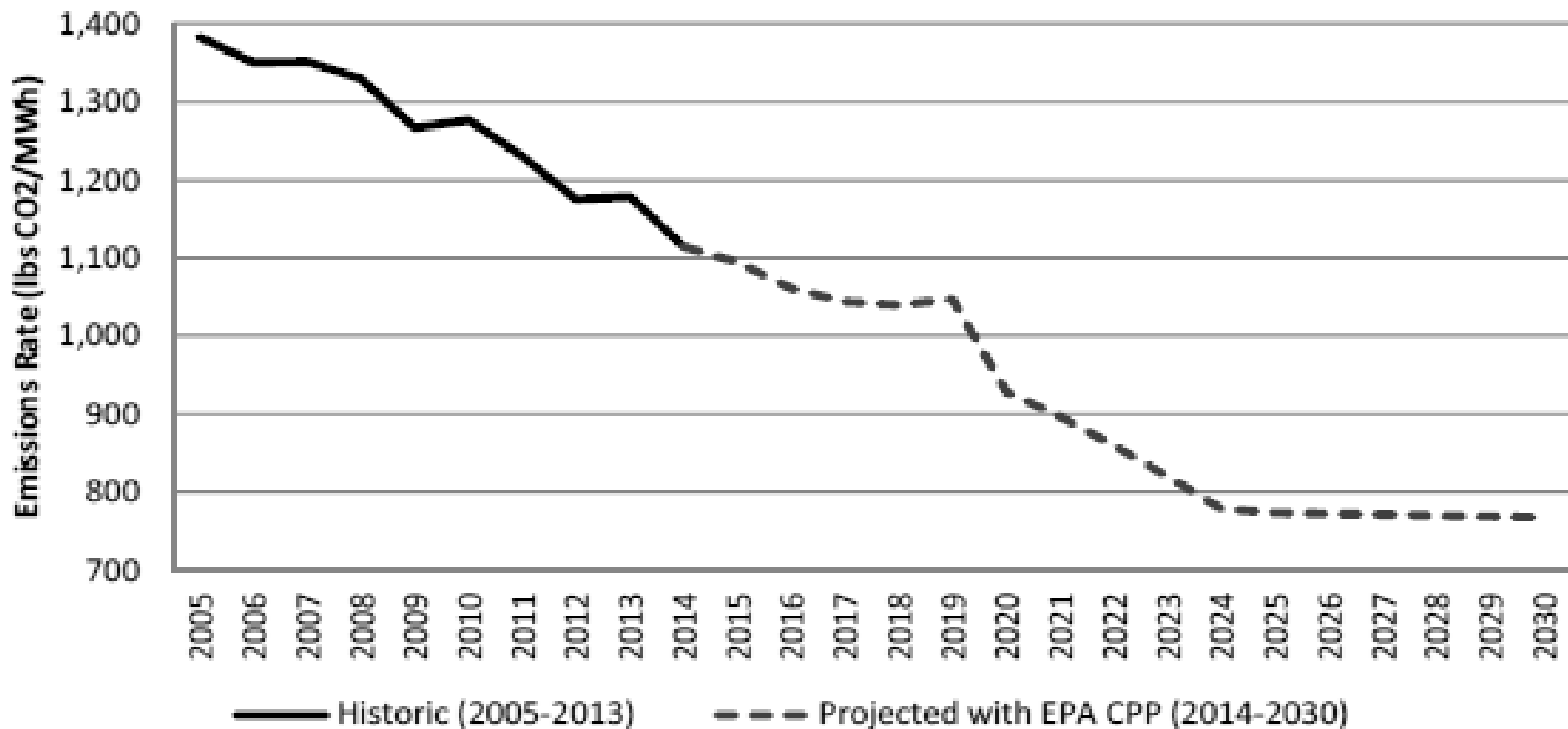
TABLE 4.1: Annual Vehicle Energy Cost Comparison				
Annual Vehicle Energy Costs^a				
	2015 Models			
	Nissan LEAF All-electric PEV 30 kWh/100 miles	Nissan Versa 1.6 L, 4 cyl, Auto 4-spd 30 MPG city/hwy	Ford F-150 2WD 3.5 L, 6 cyl, Auto, Turbo 20 MPG city/hwy	Toyota Prius 1.8 L, 4 cyl, Auto 50 MPG city/hwy
Total Annual Cost (Fuel, Monthly Lease, Annualized Due at Signing)	\$4,192	\$4,568	\$7,058	\$5,002

Environmental Benefits



Carbon Intensity of US Electric Generation, 2005-2030

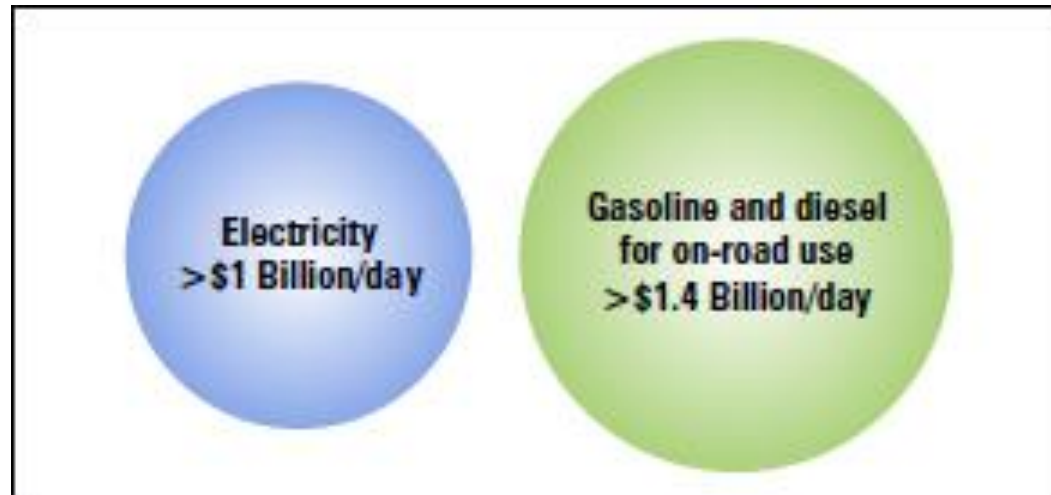
Source: Energy Information Administration



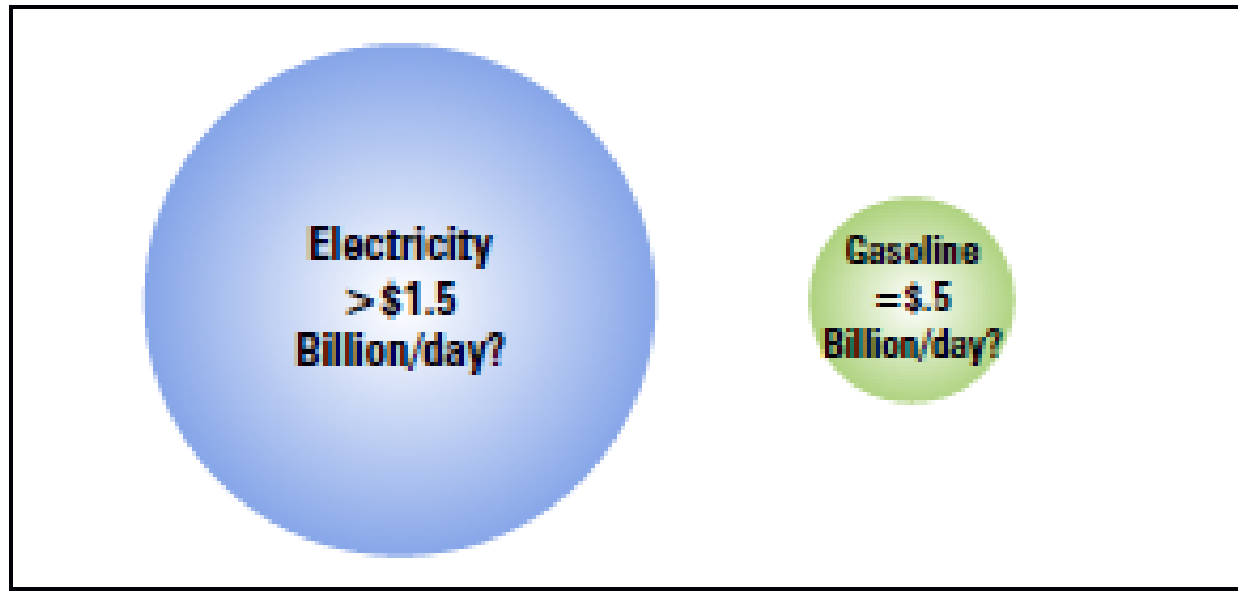
Financial and Grid Benefits to Utility



Current Daily U.S. Consumer Energy Spending

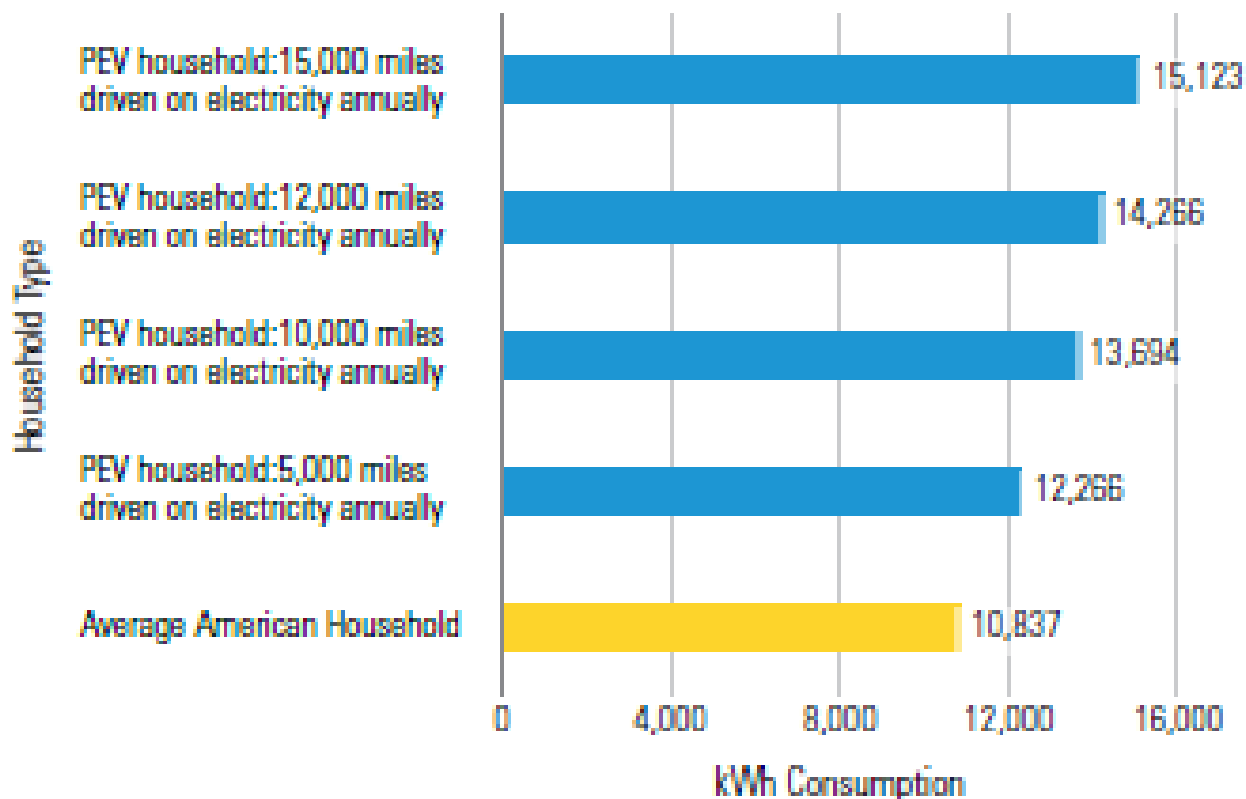


Future Daily U.S. Consumer Energy Spending?

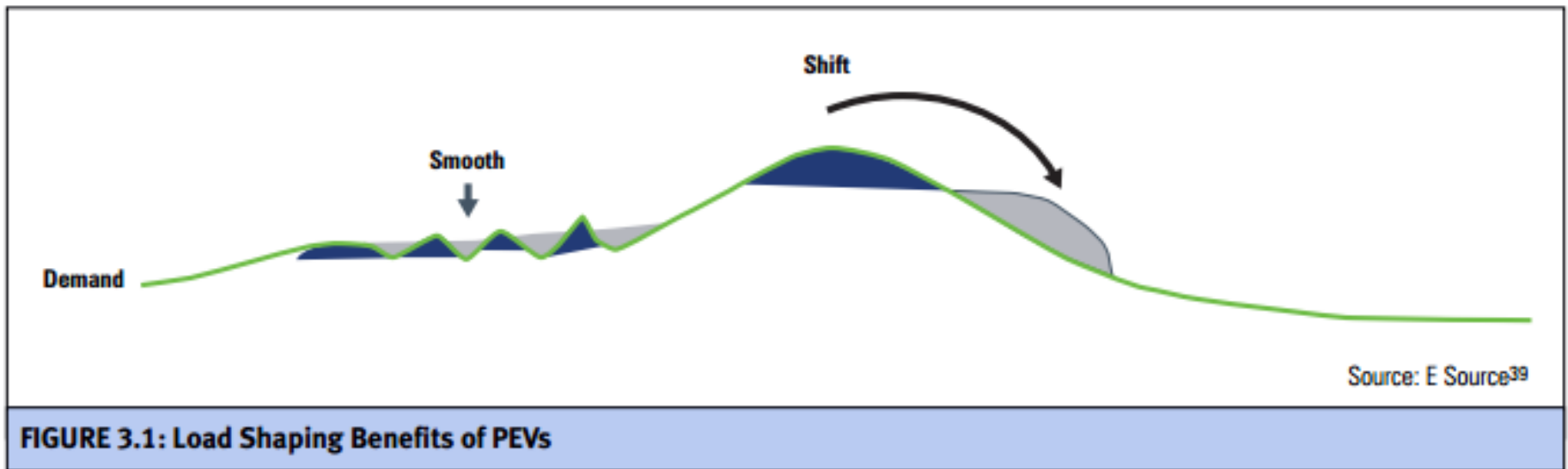


Benefits to Utilities: Increased Sales

Average Annual kWh of Grid Electricity Consumed per Household Type



Grid benefits



Variables Influencing Grid Benefits/Risks from PEVs

- Distribution system/circuit level capacity
- Time of day that PEV charging occurs
- PEV adoption rates
 - Location of PEV adoption (e.g., is it clustered?)
- EVSE levels

Alignment with Mission



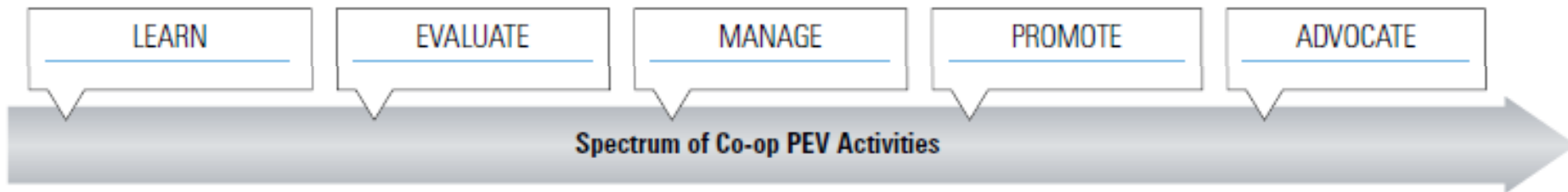
The Role of Public and Member-Owned Utilities: Community Service



Pathways Forward



Spectrum of PEV-Related Actions



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