Electric Vehicles as Part of Beneficial Electrification

Keith Dennis
Vice President, Consumer Member Engagement, BTS
Overview – What is Beneficial Electrification

Video available at: www.beneficiallelectrification.com
What is “Beneficial Electrification?”

Beneficial Electrification includes the application of electricity to end-uses where doing so satisfies at least one of the following conditions, without adversely affecting the others:

– Saves consumers money over time;
– Benefits the environment and reduces greenhouse gas emissions;
– Improves product quality or consumer quality of life;
– Fosters a more robust and resilient grid

Beneficial Electrification programs are a valuable opportunity to engage both electric utilities and environmental groups in the effort to identify solutions that work well for the end-use consumer, local communities and the environment.

_{NOT an “Electrify Everything” Concept}_
Interests are Beyond Just EVs
Electrify Your World!
An animated video that discusses the benefits of choosing electricity to power your everyday life, from your home, to your car and even your lawn equipment.
August 2020

For Businesses – Choose Electricity!
An animated video that discusses the benefits of electrifying businesses, from cost savings to performance improvements and meeting environmental and sustainability goals.
August 2020
We have partnered with BEL and NRECA statewide members to hold events in six states (Electrify MN, NC, CO, WI, IA, IN, VA, NM). AK, Planned.
Recent NRECA EV Reports (cooperative.com)

- Consumer Expectations of the Electric Vehicle Owners
- Electric Transit Buses 10 Things to Consider When Preparing to Plug In Your Municipal Transit Bus Fleet
- Electric Cooperative Load Growth to Accommodate a Migration to Electric Vehicles
- Electric Vehicle Service Equipment Load Control Case Studies
- Viable Fuel Alternatives to Class 7/8 Diesel Trucks
Recent EV NRECA Reports (cooperative.com)

- Rate Options That Support Electric Vehicle Adoption
- Preparing To Plug In Your Fleet 10 Things to Consider
- Electric Trucks Where They Make Sense
- Medium-Duty Electric Trucks Cost Of Ownership
- Charging Infrastructure for Electric Trucks
- Gearing Up for Electric Vehicles: Residential EVSE Program Design for Co-ops
NRECA EV Services

- Strategic Planning
- EV Pilots
- Dealer Engagement
- Grant Assistance
- Consumer Engagement Design
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Co-Chair of the Beneficial Electrification League
Clean Cities Overview

October 20, 2020

Linda Bluestein, Clean Cities Co-Director And Vehicle Technology Manager
U.S Department of Energy
Vehicle Technologies Office

- Batteries and Electrification
- Materials Technologies
- Energy Efficient Mobility Systems
- Advanced Engine and Fuel
- Technology Integration

How Do Clean Cities Coalitions Fit Within DOE?

VTO develops advanced transportation technologies to:

- Improve energy efficiency
- Increase domestic energy security
- Reduce operating cost for consumers and business
- Improve global competitiveness of U.S. economy
Technology Integration Program

Provide objective/unbiased data and real-world lessons learned that inform future research needs and support local decision-making.
Clean Cities Coalition Network

Building partnerships to advance affordable, domestic transportation fuels and technologies

Clean Cities Coalitions:

- Serve as forums for local stakeholders to connect and collaborate on saving energy and using affordable alternative fuels
- Provide grassroots support and resources on new transportation technologies and infrastructure development
- Support networks to help their stakeholders identify cost-effective solutions that work locally
Clean Cities Portfolio

Light-, Medium-, and Heavy-Duty Vehicles

Alternative and Renewable Fuels and Infrastructure

Idle Reduction Measures and Fuel Economy Improvements

New Mobility Choices and Emerging Transportation Technologies
Nearly 100 Clean Cities coalitions with thousands of stakeholders, representing ~80% of U.S. population

cleancities.energy.gov
Locally Based Public-Private Partnerships

- 16,000 stakeholders nationwide
- 43% private sector
- 57% public sector
Diverse Stakeholders

Fleets:
- Private companies
- Federal, state, and municipal
- School districts, universities
- Airports, transit agencies
- Taxi companies, ride share services.

Product and Service Providers:
- Vehicle and engine manufacturing
- Conversion companies
- Vehicle dealerships
- Fueling equipment suppliers, installers, and providers.

Others:
- Environmental and energy agencies
- Alternative fuel and clean air advocacy organizations
- General public.
Coalition projects have resulted in a cumulative impact in energy use equal to nearly **10 billion** gasoline gallon equivalents resulting from reduced fuel use and increased fuel diversity.¹

Coalition projects have helped to put nearly **1 million** alternative fuel vehicles on the road.²

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**Measuring Clean Cities Coalition Impact**

- Enough to drive the distance to the sun and back **1,175** times
- Enough fuel to fill nearly **1.2 million** tanker trucks

**96 million** gasoline gallon equivalents of energy were saved through fuel economy improvement projects like telematics, driver training, and outfitting fleets with idle reduction equipment.²
National Partnerships: Clean Cities National Parks Initiative

Transportation projects educate park visitors on the benefits of shifting to affordable, domestic alternative fuels, advanced vehicles, and fuel-saving technologies.

cleancities.energy.gov/national-parks

Accomplishments

- 32 National Park Service units
- 20 Clean Cities Coalitions
- Over 84 million visitors reached annually
- Thousands of gallons of fuel saved
- Cleaner air across National Park System
Building Relationships and Strengthening Markets

• Connecting fleets with fuel providers and industry partners
• Offering training and information
• Supplying access to technical assistance
• Identifying funding
• Providing public recognition
• Collecting data and tracking progress
Information & Education: Websites

afdc.energy.gov

fueleconomy.gov
VTO has funded over **600 Technology Integration projects** and distributed over **$450 million** since 1993.

**Living Labs for Energy Efficient Transportation**

**AFV Adoption Through Partnerships**

**AFV Safety Training**

**Rural New Mobility Solutions**

**PEV & Gaseous Fuel Vehicle Demonstrations**

**AFV Data Collection and Analysis**

[cleancities.energy.gov/partnerships/projects](cleancities.energy.gov/partnerships/projects)
Technology Integration Funding Opportunities

Training – Experience/Education -- Safety -- Resiliency -- Infrastructure -- Living Labs
Summary of Projects Awarded for PEV Showcases FOA

**Midwest EVOLVE**
- American Lung Association of the Midwest (prime)
- 7 states, 8 Clean Cities coalitions, 5 utilities
- 200+ events

**Northwest Electric Showcase**
- Drive Oregon (prime)
- 2 states, 3 Clean Cities coalitions, 4 utilities
- Permanent showcase in Portland + mobile showcases

**Advancing PEV Adoption in New England**
- Plug In America LLC (prime)
- 4 states, 4 Clean Cities coalitions, 2 utilities
- 40+ ride and drive events
Showcase Surveys

Online surveys were designed to be quick and consistent across events.

Pre-drive Survey
- Incoming PEV sentiments:
  - Comparison to traditional vehicles
  - Willingness to consider purchasing
- Reasons (not) considering?
- Prior PEV exposure?
- Current vehicle habits:
  - Purchase vs. lease
  - Miles driven

Test-drive

Post-drive Survey
- Sentiment changes?:
  - Comparison to traditional vehicles
  - Willingness to consider purchasing
- Reasons (not) considering?

Follow-up Survey
- Sentiment changes?:
  - Comparison to traditional vehicles
  - Willingness to consider purchasing
- Reasons (not) considering?
- Actions taken?
- If purchased, PEV habits?

~3 months later

Note: Surveys approved by OMB
Post-Drive Willingness to Consider

Respondents were more likely to consider a PEV after the event experiences.

73% expect to consider a PHEV (up from 62%)

75%* expect to consider an AEV (up from 62%)

*note: rounding
Reasons for Considering

• The top reasons to consider PEVs did not change a lot between the pre- and post-drive surveys.

• Environmental impact and fuel costs were most often selected in both pre- and post-drive surveys.

• Vehicle performance categories increased importance.
  • Overall vehicle performance (5% increase)
  • Quiet driving vehicle (3% increase)
  • Vehicle acceleration (2% increase)

• Charging categories increased importance.
  • Availability of public charging stations (4% increase*)
  • Charging at home (2% increase)

*note: rounding
Reasons for Not Considering

- Small numbers of respondents provided reasons to not consider a PEV.

- The top concerns were the driving range of the battery and vehicle cost.

- Charging options were important.
  - Ability to charge away from home.
  - Availability of public charging stations.
  - The length of time to charge the vehicle.

- Largest increasing concerns included:
  - Overall vehicle performance (7% increase)
  - Length of time to charge (6% increase)
  - Vehicle cost (5% increase)
  - Vehicle segment availability (5% increase)
FHWA National Alternative Fuel Corridors

To improve the mobility of alternative fuel vehicles, the U.S. Department of Transportation has designated national corridors in strategic locations along major highways for:

- Plug-in electric vehicle charging
- Hydrogen fueling
- Propane (LPG) fueling
- Natural gas (CNG, LNG) fueling

EV Corridors: Rounds 1-4
Workplace Charging Resources

AFDC Workplace Charging for Electric Vehicles
(afdc.energy.gov/fuels/electricity_charging_workplace.html):
Resources on planning, installing, and managing workplace charging

Workplace Charging Toolkit
(cleancities.energy.gov/technical-assistance/workplace-charging/):
• Resources on organizing and executing successful and educational workplace charging events
• Best practices, lessons learned, tools, and templates
• Guidelines on administration, registration and liability, sharing, and pricing
Contact Information

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Electric Cooperatives and Clean Cities

Jeff Springer - Manager, Innovation and Efficient Electrification
Dairyland Power Cooperative

Lorrie Lisek – Executive Director
Wisconsin Clean Cities

October 20, 2020
Dairyland Power Cooperative

- A Cooperative of Cooperatives
  - Providing generation and transmission to 24 distribution cooperatives located in four states
- These distribution cooperatives serve their retail members in the rural areas
- Most of the cities in our “footprint” are served by large Investor Owned Utilities
- Our cooperatives are located in, and around, the scenic vacation spots that people want to visit – with their electric vehicles
How Clean Cities Helps Us

- Organizing Ride and Drive Events
- Providing brochures and information specific to our region
- Public education and advocacy
- Unbiased third party credibility
- Assistance with infrastructure projects
Getting Fast Charging in rural areas...

...is like pulling hens teeth
WI Clean Cities: Local Partnerships – Global Impact

• Statewide organization
• Public/Private Partnerships
• Over 38M GGE Petroleum Displaced in 2019
• 2019 Reduction in GHG Emissions 174,000 tons

Since 2011, WCC has assisted in securing over $23M in funding for transportation projects.

New Grant Funding in 2020:
DRIVE ELECTRIC WISCONSIN &
Helping America’s Rural Counties Transition to Cleaner Fuels & Vehicles
It Takes a Coalition
The Results are Worth the Effort
Enabling Clean Vehicles is the Icing on the Cake.
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Transportation Electrification

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Great River Energy - member owners
EV Strategy

Focus areas

- Awareness
- Infrastructure and smart charging
- Retail solutions
- Commercial applications
Barriers for growth

- Consumer awareness
- Convenience of the technology (range and time)
- Lack of infrastructure – perception?

Source: International Council on Clean Transportation
Events

- Ride and Drives
- EV ‘Show and Tells’
- MN State Fair
With new charging stations now located along the I-94 corridor and Hwy 61, make your next road trip easy and electric.

**Lutsen**
Level 2 chargers available: Lutsen Resort

**Two Harbors**
Level 2 chargers available: Gooseberry Falls State Park

**Duluth**
Level 3 & 3 (fast charge) chargers available

**Sturgeon Lake**
Level 3 fast chargers: Dock’s Sports Bar and Grill

**Pine City**
Level 2 chargers: Family Playways

**Twin Cities**
Level 1, 2 & 3 (fast charge) chargers available

Visit www.plugaha.com for more information.
MPCA/VW battery electric school bus pilot

GREAT RIVER ENERGY

ELECTRIC SCHOOL BUS GRANT OPPORTUNITY

Minneapolis bus companies and the school districts they serve will soon have an opportunity to add an electric school bus to their fleets as the Minnesota Pollution Control Agency (MPCA) enters Phase 2 of its investments in programs to improve air quality, reduce pollution and move the state toward a cleaner transportation future.

The MPCA plans to invest a portion of the state’s Volkswagen settlement leading into replacing traditional diesel-fueled school buses with battery electric school buses (BESSs) from 2020-23. Projects will be funded through a competitive grant application process.

Why BESSs?
Currently, 100% of school buses on the road today run on diesel fuel. With concerns about air quality, local sources of pollution, carbon dioxide levels, and the high expenses associated with maintaining diesel engines, alternative solutions are being evaluated to reduce school bus emissions and cost.

The purchase price of a BESS is considerably higher than a diesel bus, however, compared to diesel, BESSs can achieve operational savings in both maintenance and fuel costs over the life of the vehicle. They also generate fewer greenhouse gas emissions and other pollutants, making them a good choice for the environment and children’s health.

Other benefits include: stable fuel costs, electric motors, reduced sound pollution and a reduced reliance on carbon dioxide footprint. The vehicle can also be powered 100% by renewable wind energy and serve as an educational opportunity for the public, bus company, school district and participating electric cooperatives.

Great River Energy worked with its member cooperatives, Duluth Electric Association and the cooperative jointly, to be the Illinois Electric Power Association (IEPA) and the Illinois Electric Power Association (IEPA) to identify an electric school bus, which has been successful in the field and is being used by school systems in Illinois.

GROW THE BUSINESS
EVSE One-Stop-Shop promotion

Offer details:

- $700-$800 off of an EVSE at time of purchase
- Connects participants with installation partners when requested
Building Partnerships to Meet Plug-In Electric Vehicle Goals!
October 22, 2020

Lisa Thurstin | Senior Manager
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Projects, Programs and History Working Together

- E85 Project | Clean Air Choice Program | TC4
- Accelerating Alternatives for Minnesota Drivers (AAMD)
- Michigan to Montana Clean Fuels Corridor Project (M2M)
- Midwest Electric Vehicle Opportunities: Learning, eVents, Experience (Midwest EVOLVE)
Event Highlights

Chicago Auto Show-kickoff 2017

Mall of America Ride & Drive 2016

Northtown Mall 2018

North Dakota EV Ride & Drive 2018

McLeod Coop 2019

Albertville Mall first DCFC 2017
Event Highlights

Alexandria Electric Vehicle Public Charging Hub
Dedicated: July 2020

Project Collaborators:
ALP Utilities
Twin Cities Clean Cities Coalition
Gas Technology Institute
Great River Energy
Missouri River Energy Services
Renewable Electric Association
Simpson Station Stores

JOIN US ON Zoom
FOR A VIRTUAL RIBBON CUTTING
JULY 22, 2020

Alexandria, MN
Ribbon Cutting 2020
Project Progress Collected and shared with partners

Test Drives & Surveys

- 15% of attendees have never experienced an electric vehicle before Midwest EVOLVE test drive events
- Over 70% of attendees take a further step to learn more
- 21% of attendees have purchased or leased an EV

Change in Opinion of PHEVs

- Not as good as traditional gasoline vehicles
- Don’t know
- Just as good as traditional gasoline vehicles
- Better than traditional gasoline vehicles

Responses: Pre, Post, Follow-up

Change in Opinion of Pure Electric Vehicles

- Not as good as traditional gasoline vehicles
- Don’t know
- Just as good as traditional gasoline vehicles
- Better than traditional gasoline vehicles

Responses: Pre, Post, Follow-up
Tools and Resources

Midwest EV Info List (October 2020)
US EV Info List (Updated 10/2020)

Consumer Vehicle Purchase Guidance Tool: EVolution-informing your choice for a smart purchase

How to provide EV charging for condominium and apartment buildings Guide/Worksheets
www.mudcharging.com
Questions?