CHARGING AHEAD:
GET ON THE FUEL EFFICIENCY FAST TRACK

Lorrie Lisek, Executive Director
Wisconsin Clean Cities
(414)221-4958
www.wicleancities.org
lorrie.lisek@wicleancities.org

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Wisconsin Clean Cities

- Statewide organization
- Public/Private Partnerships
- 35M+ GGE Petroleum Displaced in 2018
- Funding Opportunities $21M+

Stakeholders include:

- Fleets
- Utility providers
- Product and service providers
- Environmental and energy agencies
- Businesses
- Municipalities
- Schools/Universities

ENERGY NEUTRALITY / ENERGY REALITY
Recent Programs and Initiatives

- **Midwest EVOLVE**
  Electric Vehicle Opportunities: Learning, Events, Experience

- **PENSKE**

- **Clean Cities**
  Lake Michigan Consortium Chicago Area, South Shore, Wisconsin

- **Ethanol**
  WI BRAWT Program

- **Volkswagen Settlement**

- **SmartWay**
  U.S. Environmental Protection Agency

- **WISCONSIN SMART FLEET**

- **EPA Midwest Clean Diesel Initiative**

- **M2M 94**
  Clean Fuels Across I-94
National Alternative Fuels Corridor System

- Allows for inter-city, regional, and national travel using clean-burning fuels
- Addresses range anxiety
- Integrates with existing transportation planning processes
- Accelerates public interest and awareness of alternative fuel availability
CORRIDOR READY CRITERIA

**EV**
- DC FC only
- 50 miles between stations
- 5 miles from highway
- Public stations only
- Public stations only (no Tesla)

**CNG**
- 150 miles between stations
- 5 miles from highway
- Public stations only
- Fast fill, 3,600 psi

**LNG**
- 200 miles between stations
- 5 miles from highway
- Public stations only

**Hydrogen**
- 100 miles between stations
- 5 miles from highway
- Public stations only

**Propane**
- 150 miles between stations
- 5 miles from highway
- Public stations only
- Primary stations only

BIOFUELS WERE INCLUDED IN THE CURRENT NOMINATION ROUND
- Established through the Federal Highway Administration
- Re-engagement of existing I-94/I-80 working groups
- Preparation for Round 3 of Alternative Fuel Corridor nominations (announced Spring 2019)
- Launch of the National Association of Truck Stop Operators (NATSO) Alternative Fuels Council
- Continued education of colleagues at DOT about corridors and available resources
- Integration of corridors into existing programs
- Potential development of Midwest memorandum of understanding
Proposed Station Locations
• Consumer, public & private fleet education
• “Hands on” experiences
• Deployment of public charging stations
• Implementation of workplace charging programs
• Project partners include: Utilities, Argonne National Lab, fleets, organizations, equipment manufacturers, & auto dealers & manufacturers
Is an electric vehicle a smart consumer choice? Absolutely! But first you need the facts about EVs and how they relate to your driving needs. The EVolution consumer choice tool is here to help.

Better Energy Efficiency

Better for your Wallet

Better for the Environment

https://evolution.es.anl.gov/

https://www.afdc.energy.gov/fuels/electricity.html
Educate, Assist and Support

Contributions and major distinction from existing tools

• Direct consumer’s purchase across powertrain technologies by focusing on their basic needs (eliminates biased selections due to pre-conceived assumptions about certain models and technologies)
• Connects to AFDC, Fueleconomy, EIA websites and others in one platform
• Focus on not only monetary savings, but also energy consumption and emissions
• Utilize zip code level information to provide customized results

Better Energy Efficiency
Better for your wallet
Better for the Environment
Interactive Process in 6 steps

Vehicle Selection
- Type, size, seats, price range
- Comparison across powertrains, maker and models
- Allows for 2 alternative powertrains compared to ICE

Location Details (Specific to zip code)
- Timely fuel price (gasoline, electricity)
- Average travel time, speed
- Links to Workplace/Public charging locations
- Links to local incentives

Travel and Charging
- Workday travel and other travel (speed, duration, etc.)
- Home, workplace and other charging (duration, charger type)
- Other information (financial, ownership, etc.)

Educational Information about PEVs
- Types of charging vs. Charging time
- Weather Effects on performance and range
- Energy saving depends on travel pattern, charging rate/time

Outputs
- Savings in $ and gallons
- Total Cost of Ownership
- Savings as a function of average speed
## Evolution vs. Other EV Tools

<table>
<thead>
<tr>
<th>Tools</th>
<th>Information Provided</th>
<th>Inputs/Defaults</th>
<th>Outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>My Plugin Hybrid Calculator</td>
<td>×</td>
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</tr>
<tr>
<td>AFDC Vehicle Cost Calculator</td>
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<tr>
<td>UC Davis GreenLight EV Explorer</td>
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<tr>
<td>Sierra Club</td>
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<tr>
<td>Go Electric Drive</td>
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<tr>
<td>My GreenCar (GPS Tracking)</td>
<td>× × × × × × × × × ×</td>
<td>× × × × × × × ×</td>
<td>×</td>
</tr>
<tr>
<td>Nyserda EV Calculator</td>
<td>× ×</td>
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<tr>
<td>UC Davis Analytic Tool to Support the Implementation of EV Programs</td>
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<tr>
<td>EVolution</td>
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</table>
Goal: Attract & Connect
**RESULTS**

**Test Drives**
- 170,000 people attended events
- 7,000+ test drives completed

**Surveys**
- Pre, Post & Follow surveys completed
- 6,000 surveys collected

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 Pure Electric Vehicles**

<table>
<thead>
<tr>
<th>Change in Opinion</th>
<th>Pre</th>
<th>Post</th>
<th>Follow-up</th>
</tr>
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<tbody>
<tr>
<td>Better than...</td>
<td></td>
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</tr>
<tr>
<td>Just as good</td>
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<tr>
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<tr>
<td>Don't know</td>
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</tbody>
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Don't know

Change in Opinion of PHEVs

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</tr>
</tbody>
</table>

Don't know
## Plug-in vehicles available in Minnesota (December 2016)

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Model</th>
<th>Photo</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audi</td>
<td>A3 e-tron</td>
<td><img src="https://www.EVInfoList.com" alt="Image" /></td>
<td>5</td>
</tr>
<tr>
<td>BMW</td>
<td>i3</td>
<td><img src="https://www.EVInfoList.com" alt="Image" /></td>
<td>4</td>
</tr>
<tr>
<td>BMW</td>
<td>i8</td>
<td><img src="https://www.EVInfoList.com" alt="Image" /></td>
<td>4</td>
</tr>
<tr>
<td>BMW</td>
<td>i8</td>
<td><img src="https://www.EVInfoList.com" alt="Image" /></td>
<td>4</td>
</tr>
<tr>
<td>BMW</td>
<td>i3sDrive &amp; i8</td>
<td><img src="https://www.EVInfoList.com" alt="Image" /></td>
<td>5</td>
</tr>
<tr>
<td>BMW</td>
<td>330i</td>
<td><img src="https://www.EVInfoList.com" alt="Image" /></td>
<td>5</td>
</tr>
<tr>
<td>Chevrolet</td>
<td>Volt</td>
<td><img src="https://www.EVInfoList.com" alt="Image" /></td>
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<tr>
<td>Ford</td>
<td>C-Max Energi</td>
<td><img src="https://www.EVInfoList.com" alt="Image" /></td>
<td>5</td>
</tr>
<tr>
<td>Ford</td>
<td>Focus</td>
<td><img src="https://www.EVInfoList.com" alt="Image" /></td>
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<td>Focus</td>
<td><img src="https://www.EVInfoList.com" alt="Image" /></td>
<td>5</td>
</tr>
<tr>
<td>Hyundai</td>
<td>Sonata PHEV</td>
<td><img src="https://www.EVInfoList.com" alt="Image" /></td>
<td>5</td>
</tr>
<tr>
<td>Nissan</td>
<td>Leaf</td>
<td><img src="https://www.EVInfoList.com" alt="Image" /></td>
<td>5</td>
</tr>
<tr>
<td>Porsche</td>
<td>Panamera S E-hybrid</td>
<td><img src="https://www.EVInfoList.com" alt="Image" /></td>
<td>2</td>
</tr>
<tr>
<td>Porsche</td>
<td>Cayenne S E-hybrid</td>
<td><img src="https://www.EVInfoList.com" alt="Image" /></td>
<td>5</td>
</tr>
<tr>
<td>Tesla Motors</td>
<td>Model S</td>
<td><img src="https://www.EVInfoList.com" alt="Image" /></td>
<td>5</td>
</tr>
<tr>
<td>Tesla Motors</td>
<td>Model X</td>
<td><img src="https://www.EVInfoList.com" alt="Image" /></td>
<td>7</td>
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<tr>
<td>Toyota</td>
<td>Prius Prime</td>
<td><img src="https://www.EVInfoList.com" alt="Image" /></td>
<td>4</td>
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<tr>
<td>Volvo</td>
<td>XC90 T8</td>
<td><img src="https://www.EVInfoList.com" alt="Image" /></td>
<td>7</td>
</tr>
</tbody>
</table>

Alternative Fuels Data Center

- Laws & Incentives
- Interactive tools
- Maps and Data
- Case studies
- Fuel conservation strategies
- Information on alternative fuels, vehicles, and fueling
- Searchable publications database
Clean Cities: Tools of the Trade

www.afdc.energy.gov
AFDC: Alternative Fueling Station Locator Mobile App
AFDC STATION LOCATOR

301 EV Stations
Public & Private

www.wicleancities.org

www.afdc.energy.gov/stations

AFDC Tools: Alternative Fuel and Advanced Vehicle Search

Find and compare alternative fuel vehicles (AFVs), engines, and hybrid systems. Some of the light-duty AFVs in this tool may count toward vehicle-acquisition requirements for federal fleets and state and alternative fuel provider fleets regulated by the Energy Policy Act (EPAct).

### Search Results - 1 - 8 of 175 vehicles

**Filter by: Fuel/Technology:** Biodiesel (B20), Ethanol (E85), Hydrogen Fuel Cell, CNG - Compressed Natural Gas, CNG - Bi-fuel, Electric, Plug-in Hybrid Electric, Hybrid Electric | **Class/Type:** Sedan/Wagon | **Manufacturer:** All

<table>
<thead>
<tr>
<th>Model</th>
<th>Technology</th>
<th>Engine</th>
<th>Transmission</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Audi A3 e-tron (2015)</strong></td>
<td>Plug-in Hybrid Electric</td>
<td>1.4L I4, 75 kW electric drive</td>
<td>Auto</td>
</tr>
<tr>
<td><strong>Audi A4 Quattro (2015)</strong></td>
<td>Ethanol (E85)</td>
<td>2.0L I4</td>
<td>Auto</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fuel Economy</th>
<th>Emission Certification</th>
<th>Engine Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 mpg city / 22 mpg hwy</td>
<td>LEV II ULEV, Tier 2 Bin 5</td>
<td>2.0L I4</td>
</tr>
</tbody>
</table>

Find a Dealer

### Refine Your Search

- All Fuels
- Biodiesel (B20)
- Ethanol (E85)
- Hydrogen Fuel Cell
- LNG - Liquid Natural Gas
- CNG - Compressed Natural Gas
- CNG - Bi-fuel
- Propane
- Propane - Bi-fuel
- Electric
- Plug-in Hybrid Electric
- Hybrid Electric
- Hybrid - Hydraulic

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Clean Cities
U.S. Department of Energy
AFDC Tools: Vehicle Cost Calculator

Results:

- **Total cost of ownership**
- **Annual fuel use and operating costs**
- **Cost per mile**
- **Annual emissions.**
Workplace Charging for Plug-In Electric Vehicles

With proper workplace charging implementation, employers can help increase the convenience and affordability of driving electric for their employees. Workplace charging can also help attract and retain a cutting-edge workforce and demonstrate leadership in adopting advanced technologies.

Employers and workers can find information about workplace charging in Plug-In Electric Vehicle Handbook for Workplace Charging Hosts. For additional resources on planning, organizing, and executing successful and educational workplace charging events, see the Clean Cities Workplace Charging Toolkit.

During 2013–2017, the U.S. Department of Energy's (DOE) Workplace Charging Challenge partnered with organizations who committed to provide plug-in electric vehicle (PEV) charging stations to their employees. Many of the best practices, lessons learned, tools, and templates available here are based on the accomplishments of Challenge partners. To learn more about the Challenge partners and their impact, see the following annual reports:

- 2016 Update: A New Sustainable Commute
- 2015 Mid-Program Review: Employees Plug In
- 2014 Update: Employers Take Charge

Evaluating and Planning for Workplace Charging

Determining if a workplace charging program is right for an organization often begins by gauging employee interest through a survey. The following resources can help employers determine how workplace charging may support their sustainability portfolio:

- Electricity Sources and Emissions – Explore how grid mix impacts the emission reduction benefits of PEV-commuting employees.
- Emission Reduction Benefits of Workplace Charging – Learn how workplace
CONSIDERATIONS FOR ELECTRIC VEHICLE ADOPTION

- The **U.S.** market share of plug-in **electric** passenger cars increased from 0.14% in 2011 to 0.62% in 2013; reached 0.75% in 2014 and fell to 0.66% in 2015. Then climbed to 0.90% in 2016, to 1.13% in 2017, and achieved a **record market share of 2.1% in 2018.**

- The 2018 numbers are in, and total U.S. EV sales came in at 361,307 for the year — up 81 percent over 2017 — according to the tracking website **Inside EVs.** Atlas EV Hub shows 20% increase in 2nd quarter 2019 over 2018.

- Phase out of Federal Tax Credit has begun. GM & Tesla are at 25% or $1,875. No longer available after 12/31/19.

**WISCONSIN CLEAN CITIES:**
- FIRST RESPONDER TRAINING
- ORDINANCES
- MOBILITY/AUTONOMOUS ISSUES
- CHARGING INFRASTRUCTURE
- DEALER TRAINING
- WORKPLACE CHARGING
- INCENTIVES
- MULTI-UNIT CHARGING OPTIONS
- COLLABORATION
- EDUCATION
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Resources available www.wicleancities.org

25th Anniversary Annual Meeting & Awards December 4, 2019
Harley-Davidson Museum – Milwaukee, WI

National Drive Electric Week - September 14 – 22, 2019

Future of Transportation – Legislative Event September 25, 2019

Visit our website for details on upcoming events and trainings!

THANK YOU!