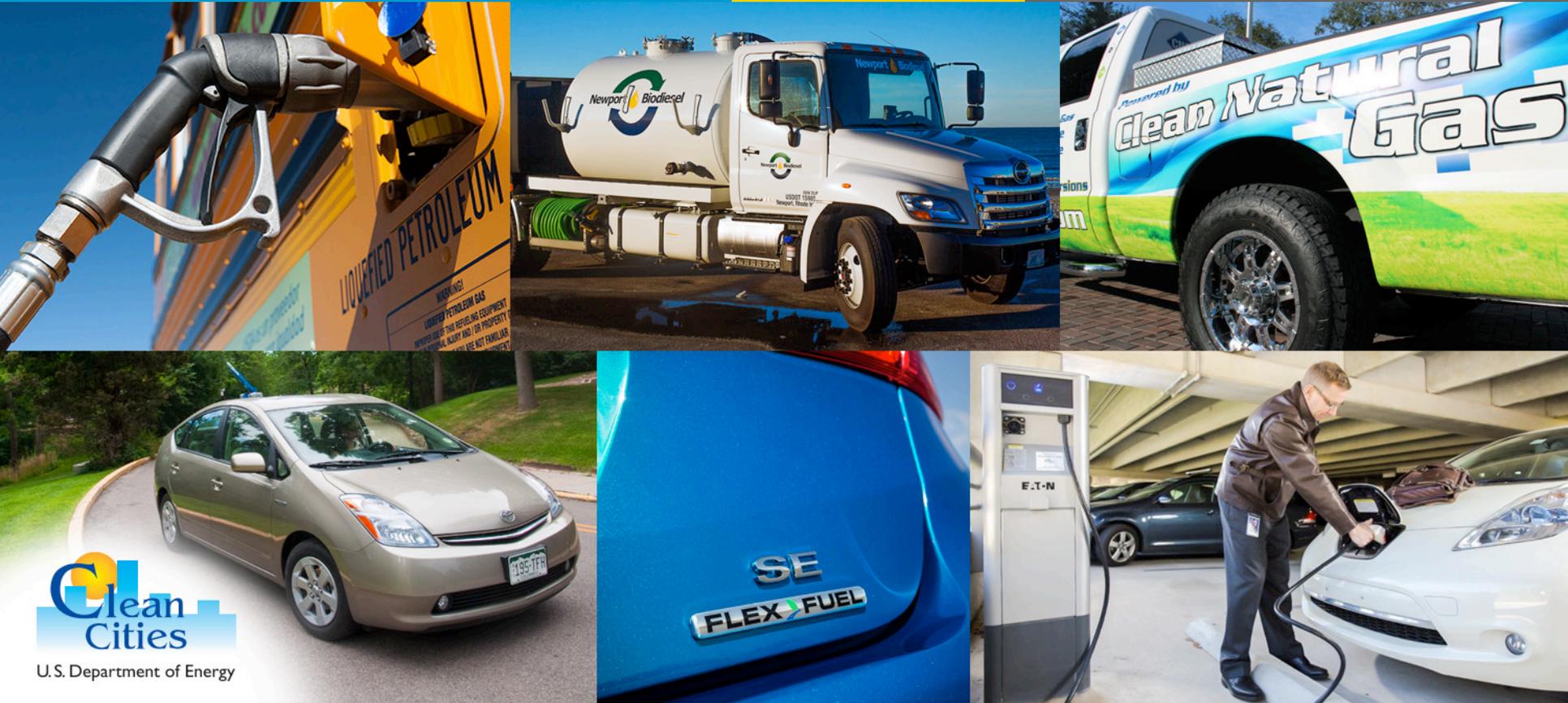


Getting Juiced on the Job

U.S. DEPARTMENT OF
ENERGY

Energy Efficiency &
Renewable Energy



Workplace Electric Vehicle Charging

October 7, 2019

Kelly A. Bragg, W.Va. Office of Energy

Coordinator, W.Va. Clean State Program

<https://energywv.org/alternative-fuels-and-vehicles/clean-state-program>



Celebrating 25 years!

- **Formed:** Oct. 19, 1994
- **Re-designated:** 1999, 2005, 2012, 2016
- **Host agency:** W.Va. Office of Energy
- 60+ stakeholders
- Coalition funded through U.S. Department of Energy
- In 2018, stakeholders reduced 654,182 gasoline gallon equivalents through EV use, reducing idling, and the use of alternative fuels (E85, biodiesel, CNG and propane)
- 20 percent improvement over 2017

www.energywv.org/alternative-fuels-and-vehicles/clean-state-program

Three types of electric vehicles



- 🚗 Hybrid electric vehicle (HEV)
- 🚗 Plug-in hybrid electric vehicle (PHEV)
- 🚗 Electric vehicle (EV)

2017: 40 Teslas, 44 Volts, 4 Bolts, 13 Leafs

2018: 74 Teslas, 38 Volts, 14 Bolts, 11 Leafs

Level 1 charging

Information from JNS Power & Control Systems Inc.

12 amps/120V

~1.4kW or 4.5 miles per charge-hour

36 miles per 8 hours



Level 2 charging

Information from JNS Power & Control Systems Inc.

14-32 amps/240 single phase
~3.3-7.7kW or 11-27 miles per charge-hour
92-215 miles per 8 hours



Level 2 charger at South Charleston Public Library

What makes up the cost of charging?

Information from JNS Power & Control Systems Inc.



Level 2 charger at South Charleston Public Library

-  Electrical
-  Equipment and installation
-  EV charger management

Demand charge (\$): RATE of electricity consumption

Billed as peak 15-minute interval of consumption rate X utility demand charge

$$6 \text{ KW} \times \$7.0/\text{KW} = \$42 \text{ monthly demand charge}$$

Electricity charge (\$): AMOUNT of electricity consumption

Billed as total monthly electricity X electricity rate

$$600 \text{ kWh} \times \$0.06/\text{kWh} = \$36 \text{ electricity charge}$$

Strategies to reduce installation costs

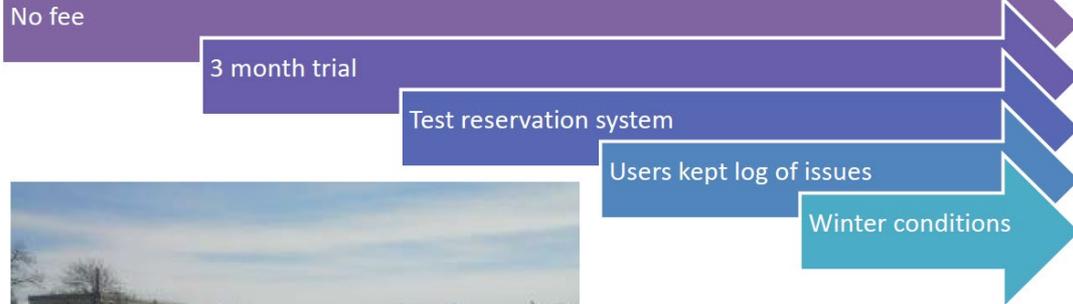
Information from JNS Power & Control Systems Inc.

- 🚗 Work with electric utility provider
- 🚗 Locate chargers close to electrical service
- 🚗 Avoid trenching
- 🚗 Rough in capacity for future chargers
- 🚗 Locate chargers between parking stalls
- 🚗 Bundle installation with other site upgrades

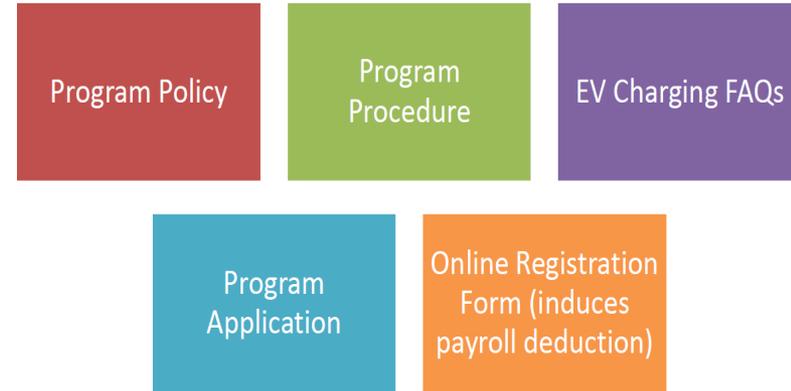
EV charging at Argonne

Information from 2015 Argonne National Laboratory presentation

Pilot program



Program details



Program details



Champion! Key players! Plan!

- Establish program oversight and enforcement
- Decide on station access
- To charge or not to charge ... for charging
- Maximize utilization by sharing



ECOSYSTEM

AN AMBASSADOR,
someone who will
personally own it!



Establish program oversight, enforcement

Information from Chicago Area Clean Cities, 2015

Administration

Sustainability

Facilities

Transportation services

Security

Human resources

Policy enforcement

Security

Employees self-police

**Signage detours
misuse of space**

Pickering Associates carport structure and 4 EV charging stations; 40kW solar, Parkersburg

Decide on station access

Information from Chicago Area Clean Cities, 2015

Visitors and/or fleet use

 Access controlled by technology

 Signage

Registration

 Submit request and assigned parking space

 Book spot daily just like conference room

 Issued access card

 Register with security and set up account with charging station provider

Pickering Associates carport structure and 4 EV charging stations; 40kW solar, Parkersburg

To charge or not to charge...for charging

Information from Chicago Area Clean Cities, 2015

“Fee vs. Free”

- 🚗 80% offer free charging
- 🚗 15% charge fee based on usage – kWh or time
- 🚗 5% charge fixed fee
- 🚗 Consistent pricing policy
- 🚗 Review free charging with financial office to determine if any tax implications
- 🚗 Fees can offset initial costs and address fairness
- 🚗 Careful consideration not to discourage charging
- 🚗 Government owned? Taxpayer considerations/perceptions

WV Wesleyan’s carport structure and 4 EV charging stations; 60kW solar, Buckhannon

Maximize utilization through sharing

Information from Chicago Area Clean Cities, 2015

Strategies

- 🚗 Assign stations based on driver needs
- 🚗 Management assigns AM & PM slots
- 🚗 Charging Buddies share station and coordinate
- 🚗 Stations reserved on shared calendar
- 🚗 First come, first served but time limit
- 🚗 Honor system – only use when charging

WV Wesleyan's carport structure and 4 EV charging stations; 60kW solar, Buckhannon

Resources



www.workplacecharging.com/home.html

<https://fueleconomy.gov/>

https://afdc.energy.gov/files/u/publication/pev_workplace_charging_hosts.pdf

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