

Getting Juiced on the Job

U.S. DEPARTMENT OF
ENERGY

Energy Efficiency &
Renewable Energy



Workplace Electric Vehicle Charging

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<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

EV charging impacts on electricity costs

Information from JNS Power & Control Systems Inc.

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.

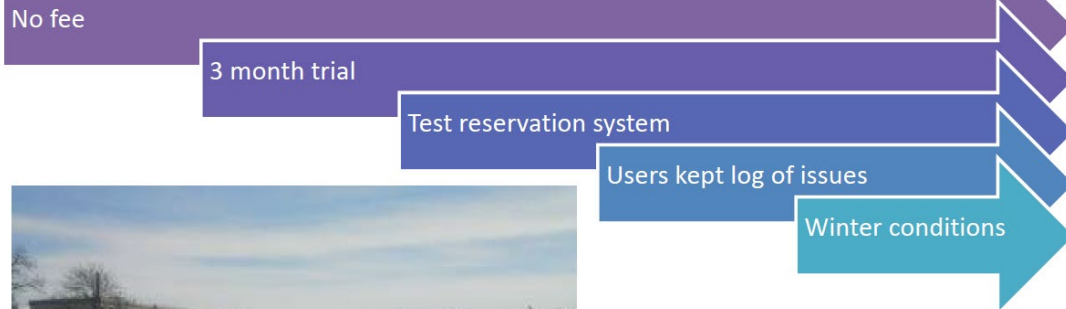
- 🚗 Work with electric utility provider
- 🚗 Locate chargers close to electrical service
- 🚗 Avoid trenching
- 🚗 Rough in capacity for future chargers
- 🚗 Locate chargers between parking stalls
- 🚗 Bundle installation with other site upgrades

Pipestem ribbon cutting for new chargers, October 2016

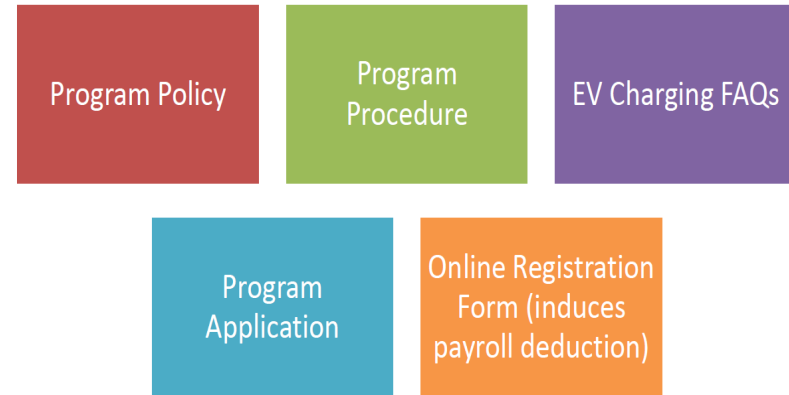
EV charging at Argonne

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

Program Policy

Program
Procedure

EV Charging FAQs

Program
Application

Online Registration
Form (induces
payroll deduction)

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

Decide on station access

Information from Chicago Area Clean Cities, 2015

Liability waiver and/or use agreement



Employee accepts responsibility for any risks



Employer held accountable for reliable access



Confer with legal counsel

By my signature below, I, [EMPLOYEE NAME], as an employee of [NAME OF ORGANIZATION], hereby:

- Attest that I am experienced in and knowledgeable with respect to the proper use of [NAME OF ORGANIZATION]'s electric vehicle charging stations
- Accept and assume all risks – foreseen and unforeseen, known and unknown – associated with my use of the charging stations; and
- Waive, release, and discharge [NAME OF ORGANIZATION] from any and all liability, claims, demands, losses, damages, causes of action, or suits of any kind or nature on account of my use of the charging stations, including for any and all personal injuries or property damage that may occur or develop in the future.

[Employee Signature]

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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