

Electric vehicle charging infrastructure recommendations to Fairfax County

Task 5 of Proffer #9, RZ 2008-PR-011

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Just to introduce ourselves

- MITRE is a not for-for-profit corporation chartered to work in the public interest
- We are a collection of Federally Funded Research and Development Centers (FFRDCs)



- Primary competencies in systems engineering, information technology, operational concepts, and enterprise modernization

How many electric vehicle charging stations should Fairfax County recommend be installed at new building sites in Tysons Corner?



None at offices. None at retail. Maybe < 2% at residential buildings.

Though all newly constructed buildings in Fairfax should include conduit infrastructure to accommodate full electrification of the fleet.

What cars are we talking about?



Prius
PHEV 12



Volt
PHEV 40



Leaf
BEV 100

What charging stations are we talking about?



Level 1

120 V

1.2-1.6 kW

8-15 hours to
charge
EV100



Level 2

240 V

3.3–7.7 kW

3-5 hours



Level 3

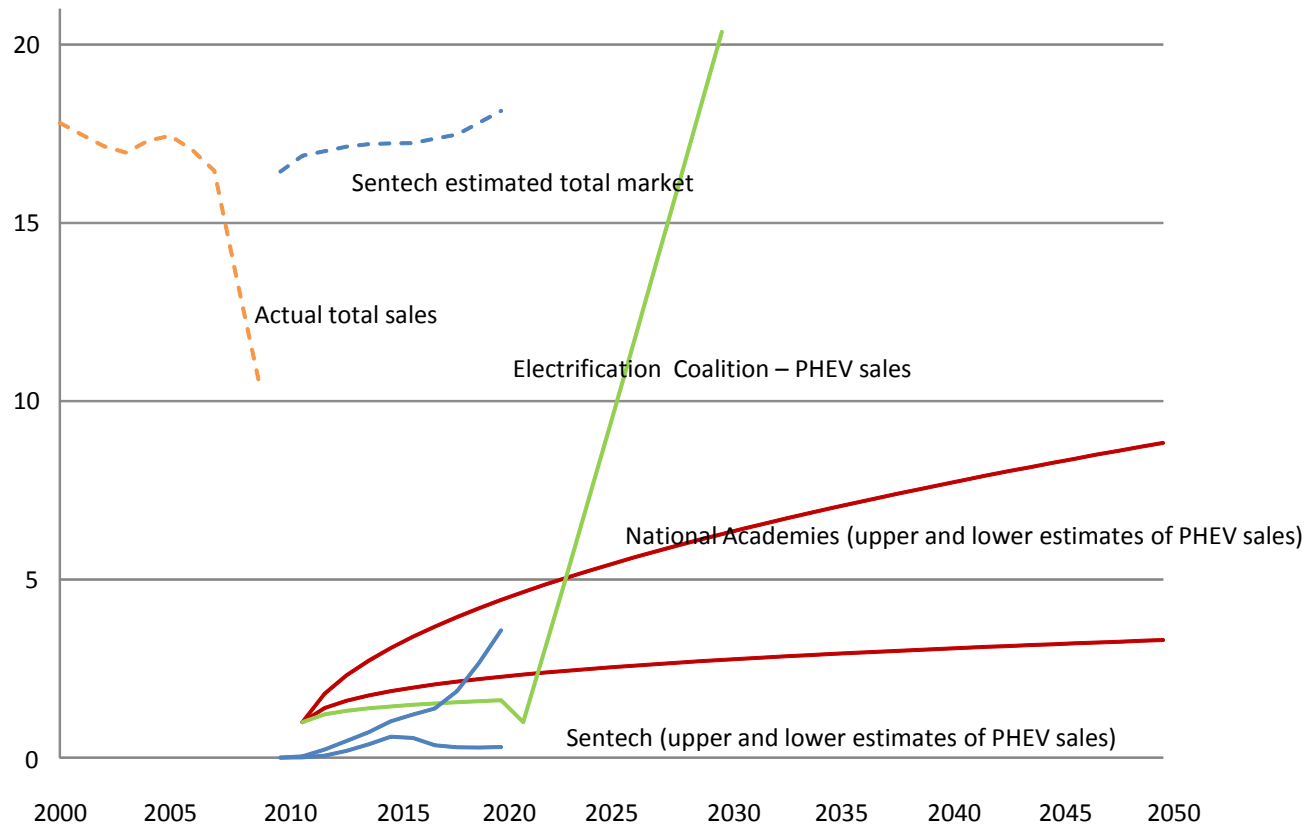
480 V

60 kW

¼ - ½ hour

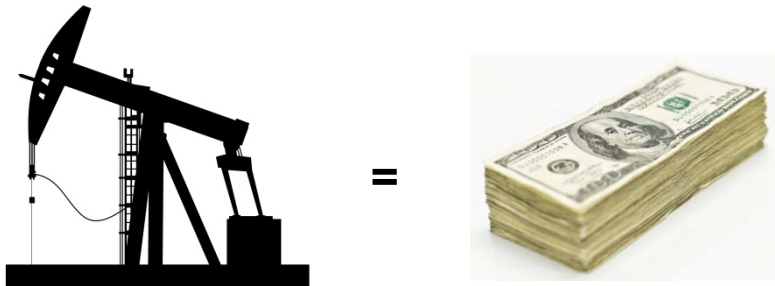
How many will there be?

Annual passenger vehicle sales – actual and projected (millions)



Assumptions

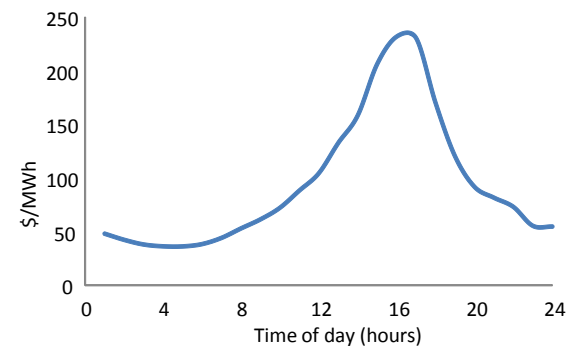
- Electric vehicles will become widespread only if they become as convenient and economical as other non-plug-in vehicles

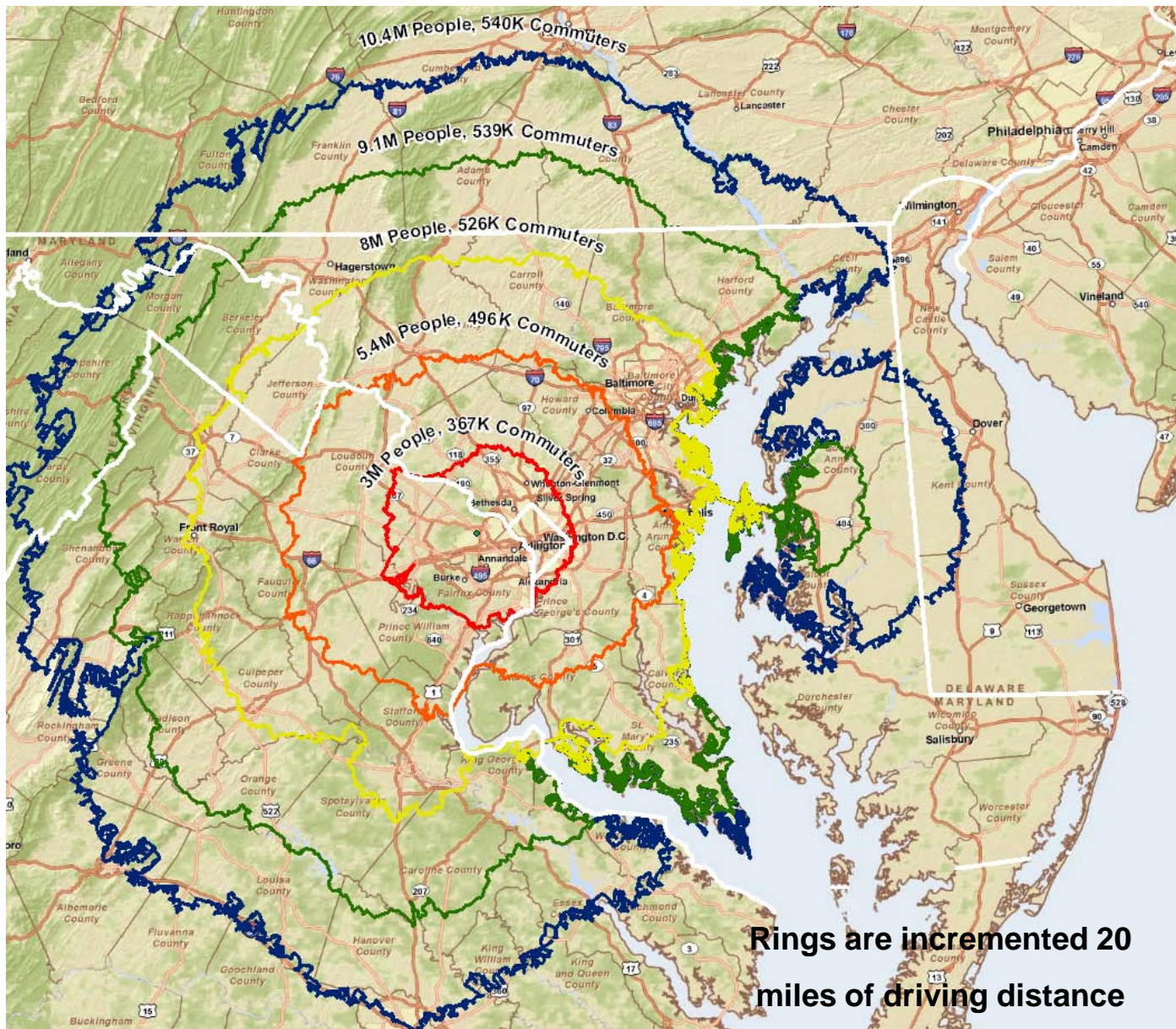


- Plug-in vehicle owners will maintain EVSE at home



- Electric vehicle charging infrastructure will only emerge when and where profit can be derived





Fairfax County 2011

1m residents

580k jobs

250k inbound
commuters

Tysons Corner 2010

17k residents

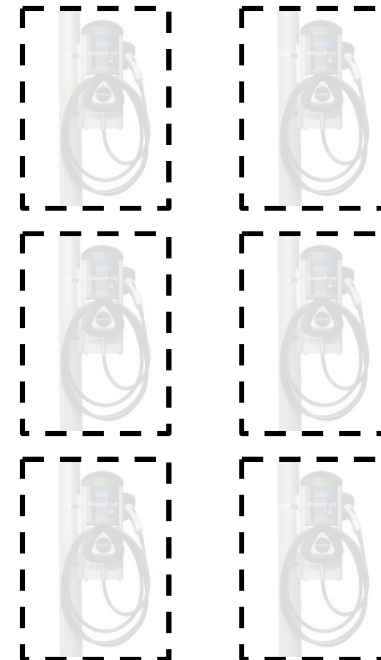
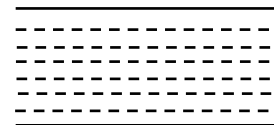
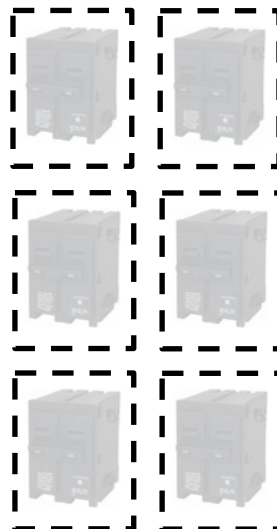
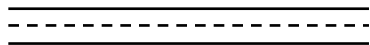
105k jobs

2050

100k residents

200k jobs

Facility recommendation – Make the space, but don't fill it



All spots at new residential construction.

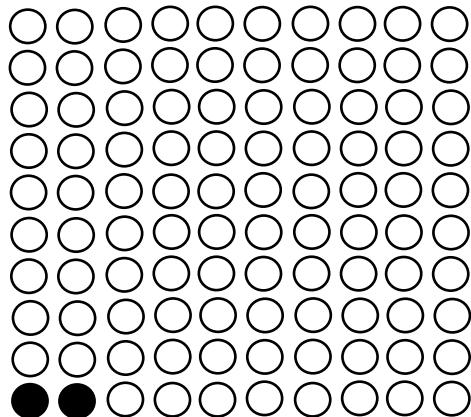
Only some spots at other developments.

General policy Recommendations

Standard mount



Supply seeding



Local government procedures



Data gathering

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01100100100101010100000111
100111010100101010101010
101001010101001010101110
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What should you remember?

- **A demonstrably accurate estimate of future vehicle adoption is impossible**
 - Best response does not depend on a single estimate
 - Prepare for full adoption
- **Strong focus on residential construction (think of the map)**
 - All residential construction should include conduit infrastructure, transformer space, and panel space for future charging station installation
- **Local government can aid the worldwide push to adoption by encouraging charging station manufacturers to move toward a standard mount**