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Unlocking Private Sector Financing for Alternative Fuel Vehicles and Fueling Infrastructure *(Preliminary Findings)*

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Electric Vehicle Charging Workshop



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Unlocking Private Sector Financing for Alternative Fuel Vehicles and Fueling Infrastructure



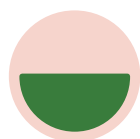
- **Partners:** NASEO, C2ES, Transportation Energy Partners, and VEIC collaboration
- **Funder:** U.S. Department of Energy's Clean Cities Program
- **Goal:** develop innovative finance mechanisms to accelerate AFV deployment



Alternative Fuel Vehicle & Fueling Infrastructure Deployment Barriers

Barriers to deployment of electric, natural gas, and hydrogen fuel cell vehicles and fueling infrastructure

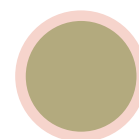
Potential role of private sector financial solutions



Case Studies on Natural Gas Vehicle Fleets and Electric Vehicle Charging

Applying the energy service company model to advance deployment of fleet natural gas vehicles and fueling infrastructure

The role of clean energy banks in increasing private investment in electric vehicle charging infrastructure



Strategic Planning Guides

Electric vehicle charging and natural gas vehicle fleets

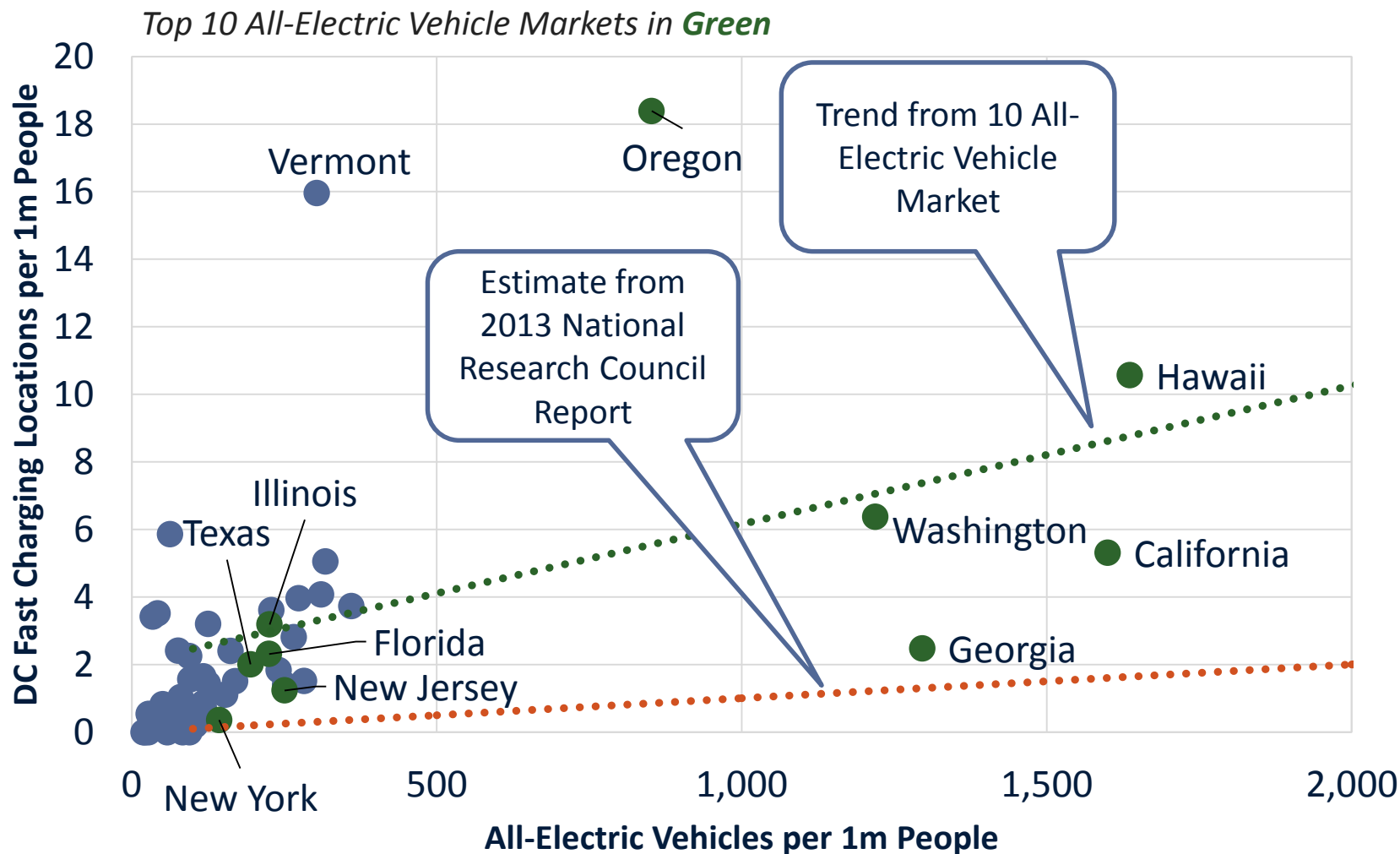
Key factors that affect financial performance

Business model application to a particular market

Implementation guidance for policymakers and businesses

Complementary Project for Washington State Legislature: Business Models for Financially Sustainable EV Charging Networks. More info at www.c2es.org/initiatives/afv-finance

DC Fast Charging and All-Electric Vehicle Deployment

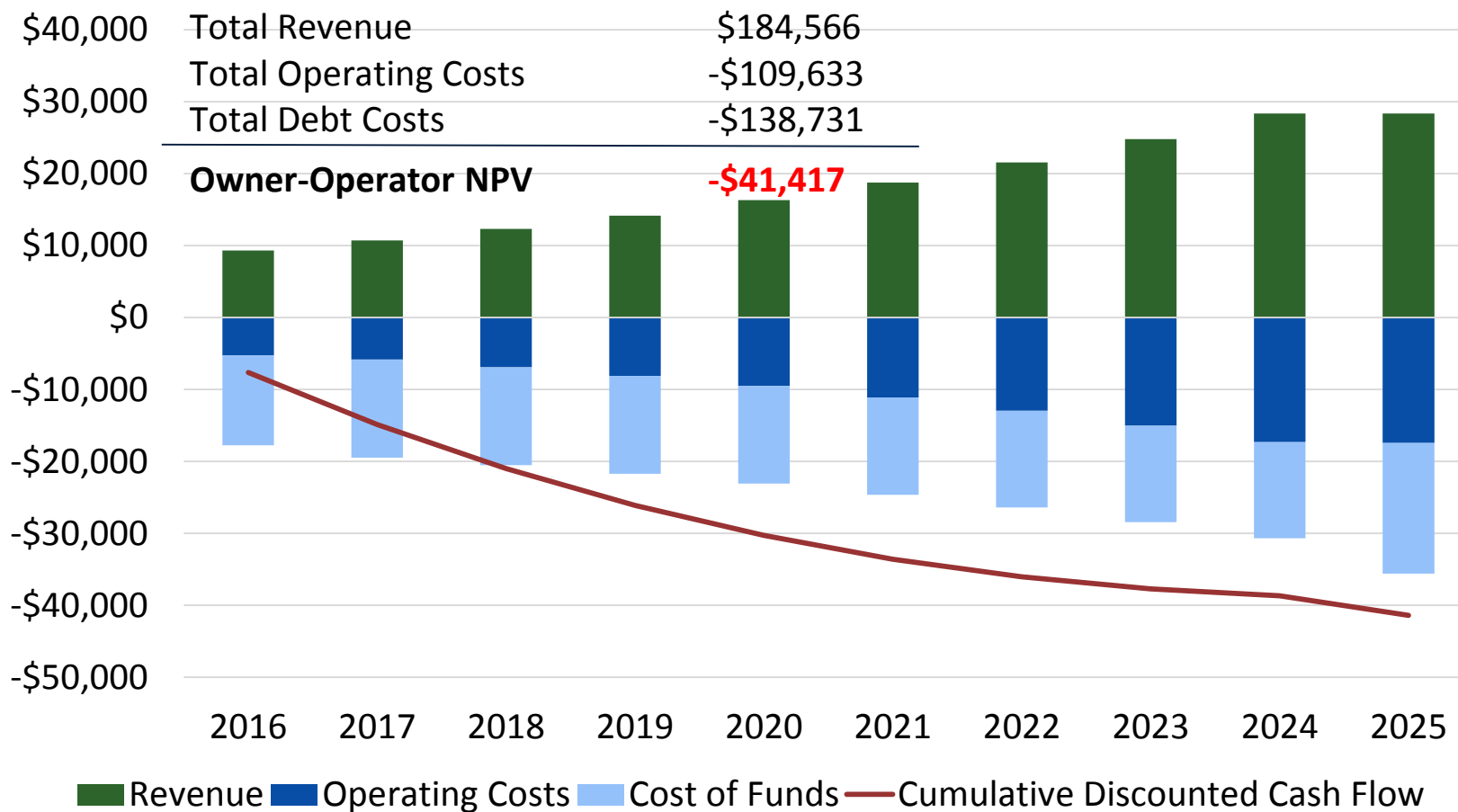


Source: C2ES and NREL analysis

Why can't the private sector currently fund the DC fast charging network on its own?



Single DC fast charging station example



More Private Investment Requires Capturing Indirect Value of Charging Services



- Business models based solely on direct revenues from EV charging services are currently financially infeasible
- Business models that capture the indirect value the private sector gains from EV charging services will increase private sector investment
- Some examples of EV charging indirect value
 - Increased sales of other products and services at businesses located near EV chargers
 - Increased tourism business from EV travel to popular destinations
 - Increased sales of EVs
 - “Clean energy” marketing and brand-strengthening opportunities
- Key private sector partners: automaker, electric utility, and retailer
 - These partners could share some of the indirect value they derive from EV charging stations by contributing funds to the charging service provider to help deploy stations

- **Define contributions from private sector partners who stand to benefit from an EV charging network**
 - Subsidize upfront cost of charging equipment
 - Share portion of indirect revenue from EV charging use with owner-operator
- **Evaluate charging station project financial performance after private sector partners share value with owner-operator of charging services**
 - Use EV Charging Financial Analysis Tool developed by C2ES and Cadmus Group for financial analysis (*download for free at www.c2es.org*)

Business Model Example in WA: 6 DC Fast Charging Stations with Automaker Subsidy



- Even with a \$42,000 subsidy from an automaker, project still loses money

Financial Metric	Result
<i>Owner-operator</i>	
Funds spent on stations (equity)	\$224,640
Funds spent on stations (loans)	\$336,960
NPV	-\$118,207
Payback period	No payback
<i>Funding partner</i>	
Amount of funds transferred to owner-operator	\$42,000
NPV	+\$19,532
Payback period	5 years
<i>Total project level</i>	
Total capital investment (spent on charging station deployment)	\$561,600
NPV	-\$87,777
Payback period	No payback

Business Model Example in WA: 6 DC Fast Charging Stations with Automaker Subsidy (Near Term: 2016-2025)



• Public Sector Interventions

- Low-Interest Loan: \$110,000 at 5.4%, 10 year term
- Grant: \$220,000
- Extension of BEV sales tax exemption

• Project Capitalization

- Total project cost = \$561,600
 - 20% owner-operator equity
 - 20% private loans
 - 20% public loans
 - 40% public grant
- Private sector partner (automaker) contributes \$42,000 up front

Financial Performance

Owner-operator

NPV	+\$136,835
Payback	5 years

Funding partner

NPV	+\$19,532
Payback	5 years

Public sector

NPV	-\$222,394
Payback period	n/a

Total project level

NPV	-\$61,033
Payback period	n/a

Business Model Example in WA: 6 DC Fast Charging Stations with Automaker Subsidy (Medium Term: 2021-2030)



- ***No public subsidies are needed***
 - Larger EV market
 - Lower equipment costs
- **Public Sector Interventions**
 - Sales tax exemption ends in 2020
 - No loans or grants are issued for this project
- **Project Capitalization**
 - Total project cost = \$508,170
 - 40% owner-operator equity
 - 60% private loans
 - Private sector partner (automaker) contributes \$42,000 up front

Financial Performance

<i>Owner-operator</i>	
NPV	+\$115,566
Payback	5 years
<i>Funding partner</i>	
NPV	+\$19,532
Payback	5 years
<i>Public sector</i>	
NPV	n/a
Payback period	n/a
<i>Total project level</i>	
NPV	+\$155,450
Payback period	5 years

- **Private sector entities that gain indirect value from EV charging station deployment can play a critical role in improving the financial performance of EV charging stations**
- **Difficult to make EV charging investment attractive to business owner-operators (5-year payback) with private sector partners alone**
- **Public sector can enable new business models in near term**
 - In near term, public sector interventions are needed for owner-operator to reach payback within 5 years for each business model
 - If the EV market develops, the role for government could be scaled down to virtually nothing in 5 years



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FOR MORE INFORMATION

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