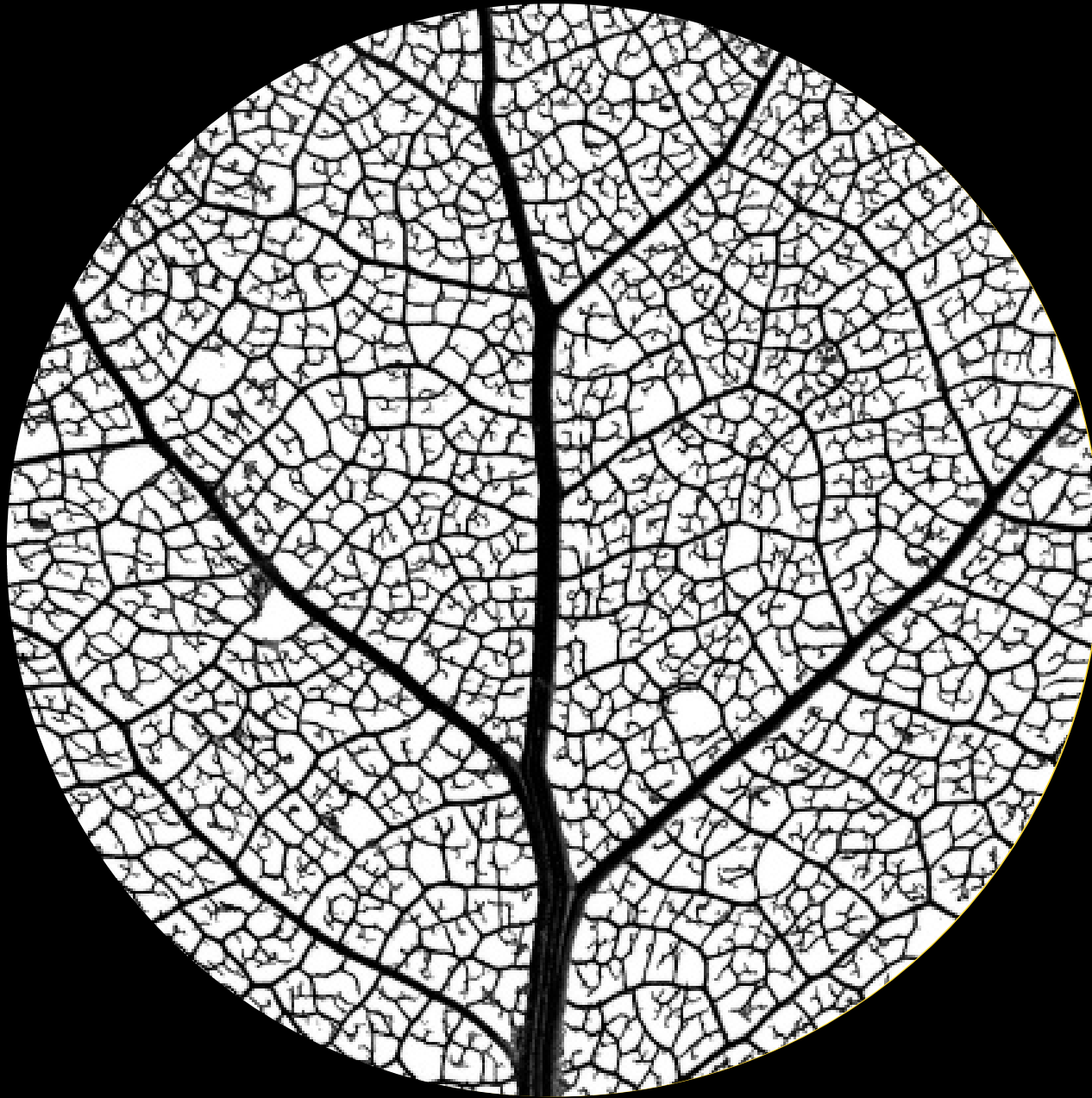




**Vermont
Energy Investment
Corporation**



Our mission:
To reduce the
economic and
environmental
costs of
energy use

Our Panelists



Jennifer Wallace-Brodeur,
Director, Transportation Efficiency



Justine Sears, Consultant



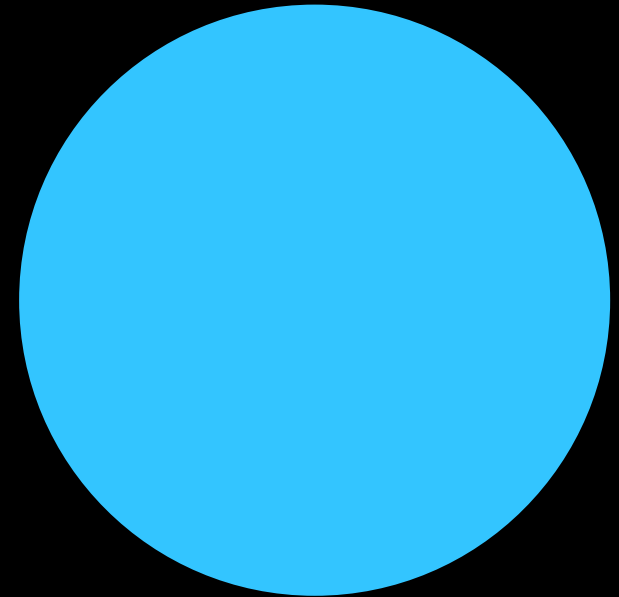
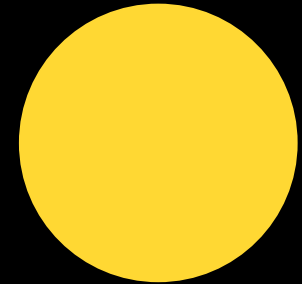
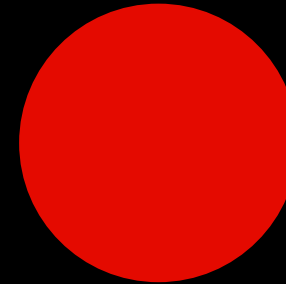
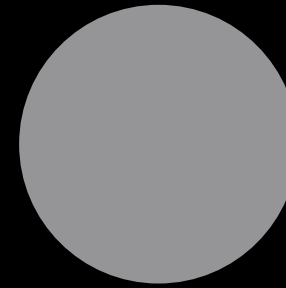
Bethany Whitaker, Senior Consultant



**Using Energy
Efficiency Finance
Models to Electrify
Fleets**

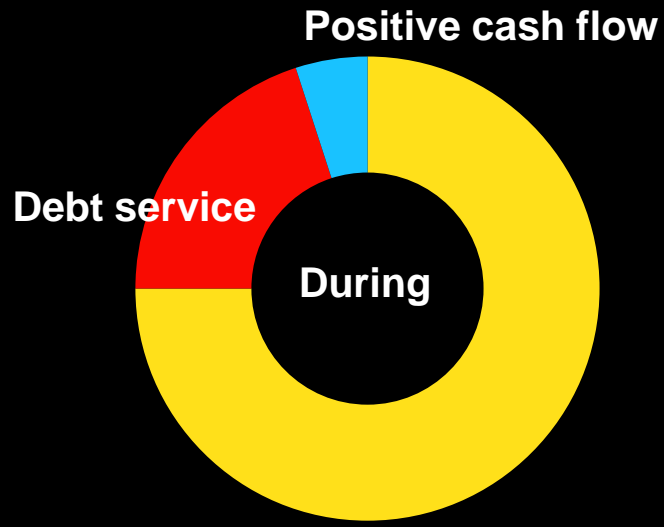


Energy Services
Company (ESCO)

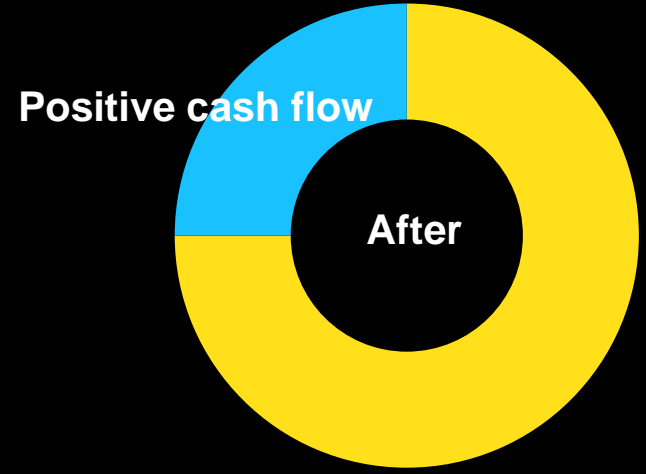




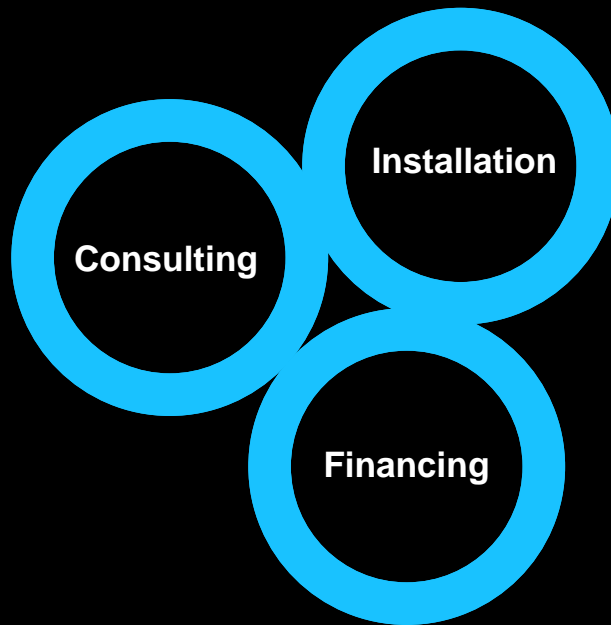
Energy costs



Energy costs



Energy costs



Transportation ESCO?



Plug-in Vehicles (EVs)

All electric



Plug-in hybrid



T-ESCO Framework

1. Focus groups
2. Fleet assessments
3. Financial modeling



T-ESCO Framework

1. Focus groups

- Interest in medium duty
- Strong interest in greening fleets
- Mixed feelings about financing

2. Fleet Assessments

3. Financial modeling

Fleet Assessments



3 Step Approach to EV Integration

(1)

Data log existing fleet of vehicles

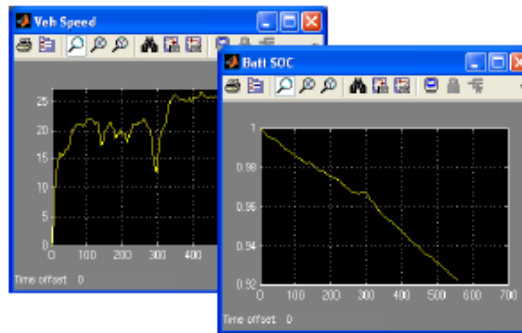


FleetCarma data logger

How are vehicles currently used in the fleet?

(2)

Test your duty cycle data in FleetCarma's EV models



Will EVs be capable to do the job?
Will they save fleet money?

(3)

Compare benchmark with customized analysis provided through online reports

Vehicle	Class	Range & Efficiency	Capacity	Options	Fleet		
2008 Toyota Prius		27 mpg	6.75 miles	\$1,938			
2011 Ford Focus	EV	✓	81%	50%	\$4,808	84	
2011 smart car	EV	✓	84%	50%	\$3,873	74	
2013 Chevrolet Volt	EV	✓	92%	50%	\$5,232	73	
2012 Nissan Leaf	EV	✓	82%	50%	\$4,801	72	
2011 Ford C-MAX Energi	EV	✓	87%	50%	\$5,857	67	
2012 Nissan Leaf	EV	✓	70%	50%	\$4,804	66	
2014 Toyota Prius-Plug	EV	✓	50%	50%	\$1,857	55	
2011 Ford Fusion Energi	EV	✓	81%	70%	\$5,838	55	

Which EV technology best matches fleet needs and optimizes TCO?

T-ESCO Fleet Assessments

Three participants

Installed logging devices
in 21 vehicles for approximately
1 month



Summary

Costs

Energy & Emissions

Capability

Options

Export

Capabilities Table

Range Capable Chart

Charge Capable Chart

Daily Utilization

Daily Utilization

Fri Oct 9 2015

Tue Oct 13 2015

Wed Oct 14 2015

Thu Oct 15 2015

Fri Oct 16 2015

Mon Oct 19 2015

Tue Oct 20 2015

Wed Oct 21 2015

Thu Oct 22 2015

12:00am

2:00am

4:00am

6:00am

8:00am

10:00am

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Summary

Costs

Energy & Emissions

Capability

Options

Export

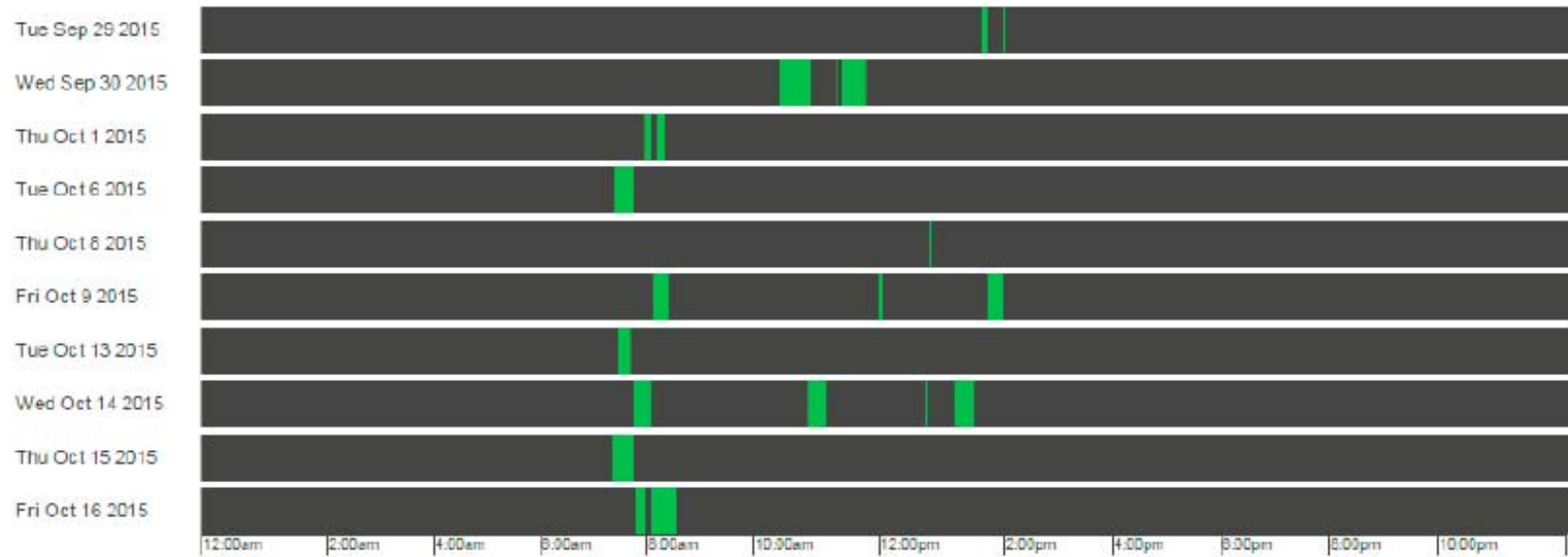
Capabilities Table

Range Capable Chart

Charge Capable Chart

Daily Utilization

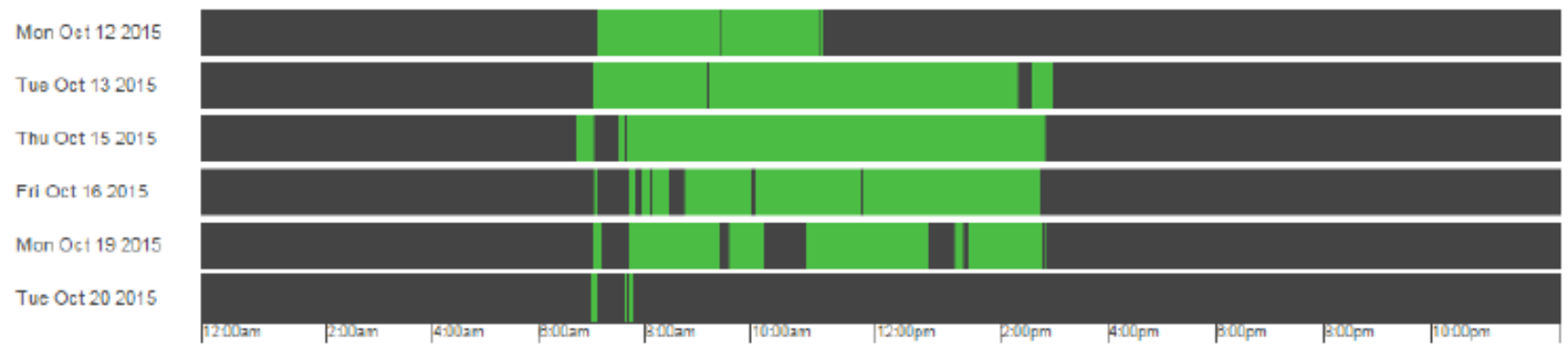
Daily Utilization



































































- Summary
- Costs
- Energy & Emissions
- Capability
- Options
- Export

- Capabilities Table
- Range Capable Chart
- Charge Capable Chart
- Daily Utilization

Daily Utilization



		Range Capable	Charge Capable	Energy	Emissions	Annual Cost	FleetCarma Score	Details
	2012 Ford Fusion Fwd	-	-	32 MPG _{eq}	0.80 lb/mi	\$7,868	-	-
	2015 Toyota Prius-Plugin			53% 	54% 	\$6,040	 65	
	2015 Ford C-MAX Energi			42% 	46% 	\$6,429	 58	
	2015 Ford Fusion Energi			39% 	42% 	\$6,710	 56	
	2016 Chevrolet Volt			35% 	43% 	\$6,576	 54	
	2015 Via Motors Pickup Truck 4WD			5% 	10% 	\$12,028	 16	
	2015 Smart fortwo electric drive			79% 	99% 	\$4,062	 12	
	2016 Mitsubishi iMiEV			80% 	99% 	\$4,308	 11	
	2015 Nissan Leaf			76% 	99% 	\$5,119	 7	
	2015 Ford Focus EV			76% 	99% 	\$5,165	 7	

Fleet Savings (6%)

\$8,349

If recommended vehicles are replaced with the best fit plug-in vehicle the fleet will save \$8,349 over a 7 year service life. The recommended fleet vehicles save 6% of the fleet budget.

Emission Reductions (58%)

↓61 tons

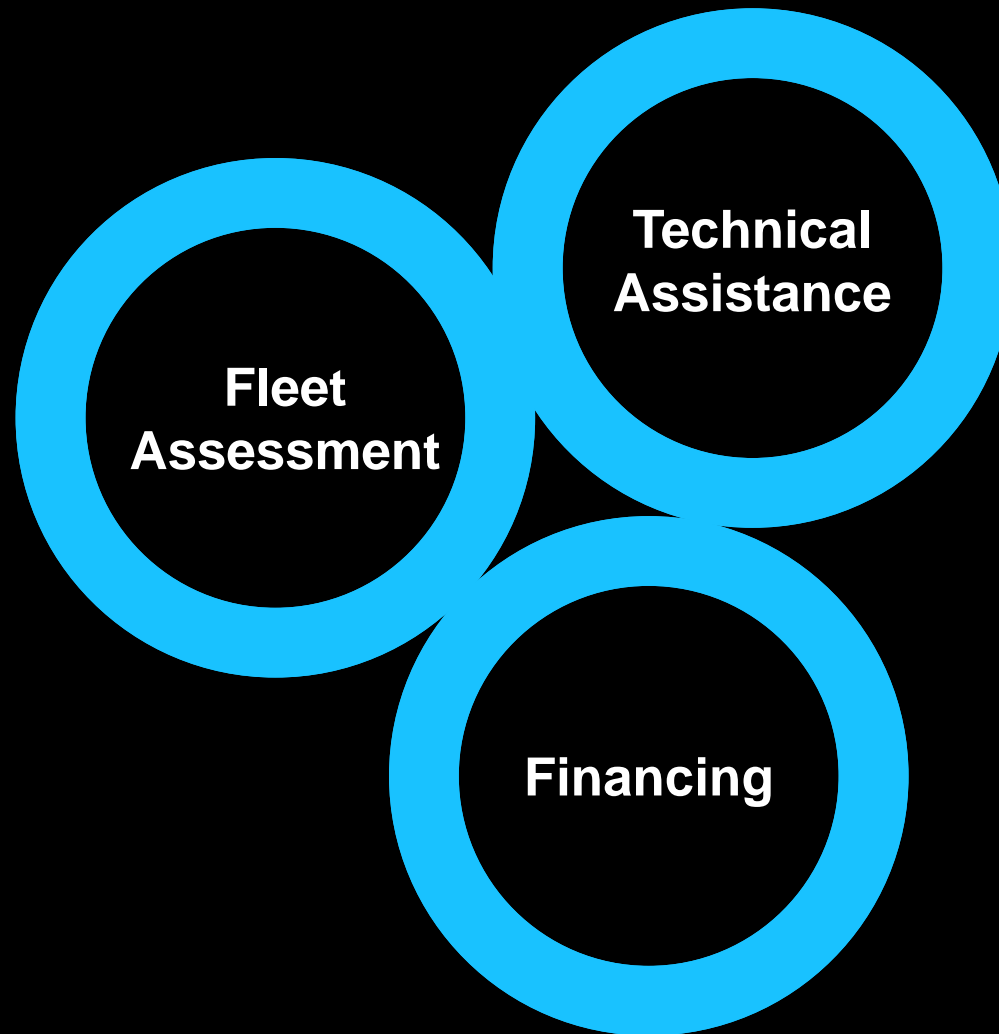
If recommended vehicles are replaced with the best fit plug-in vehicle, the fleet can realize an emission reduction of 61 tons over a 7 year service life, representing a 58% reduction in CO₂ emissions.

Fuel Reduction (59%)

↓4,758 gal

If recommended vehicles are replaced with the best fit plug-in vehicle, the fleet will reduce gasoline consumption by 4,758 gallons over a 7 year service life, representing a 59% reduction in fuel.

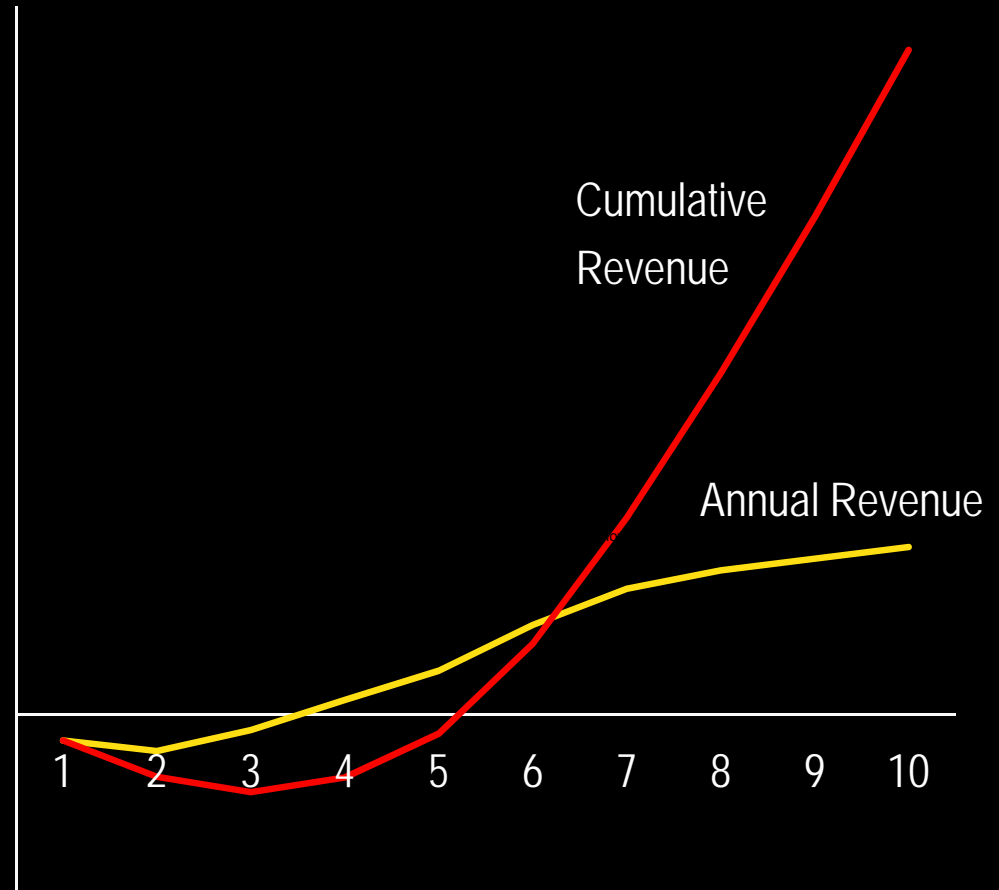
T-ESCO Services included in Program Design



T-ESCO Financial Modeling

Making the business case

- Lease or purchase
- Opportunities for savings (right-sizing, fuel savings)
- Fleet size and composition matters





Indianapolis
“Freedom Fleet”

Total Cost of
Ownership Model

Indianapolis “Freedom Fleet”

- Fleet analysis
 - Right-size fleet
 - Assess which vehicles can be swapped
 - Car sharing technology/platform
- Purchase and maintain EVs
- Install EVSE
- Charge Indianapolis a price / mile
 - Vision Fleet actively monitors driving and charging



Key Findings: T-ESCO Concept

- 1. The timing is right**
 - 2017 EVs have extended +200 mile range
- 2. External fleet management is appealing for many organizations**
- 3. Requires fleet managers to adopt new management and financing models**
- 4. Fleet conversions work by correcting inefficiencies plus integrating EVs**
- 5. Effective strategy to reduce transportation GHG emissions**

Key Findings – Financial Resources

- 1. Favorable financing for transportation infrastructure**
 - State Infrastructure Bank
- 2. Temporary Incentives for Light Duty Electric Vehicles**
 - Federal incentives for consumers
 - State incentive programs
- 3. Federal Grants for Medium and Heavy Duty EVs**
 - Diesel Reduction Act Grants (EPA)
 - LoNo Emission Program (Federal Transit Administration)

Future opportunities

- How do we serve underserved markets?
 - Those that traditionally may not have access to efficient technologies
- How can a T-ESCO address fleet inefficiencies?
- Can a T-ESCO model be adapted to replace an employee mileage reimbursement program?
- Does a T-ESCO model make sense for transit fleets and other heavy duty markets?



Thank You
www.veic.org

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