Business Innovation Fair

November 20, 2013

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City of FC Policy

- Alternative Fuels
  - Will purchase an alternative fueled vehicle if:
    - Fueling infrastructure is in place
    - Job application fits the type of factory-equipped vehicle available
    - Economics are beneficial to the City
    - Vehicle meets the operational needs of the dept.

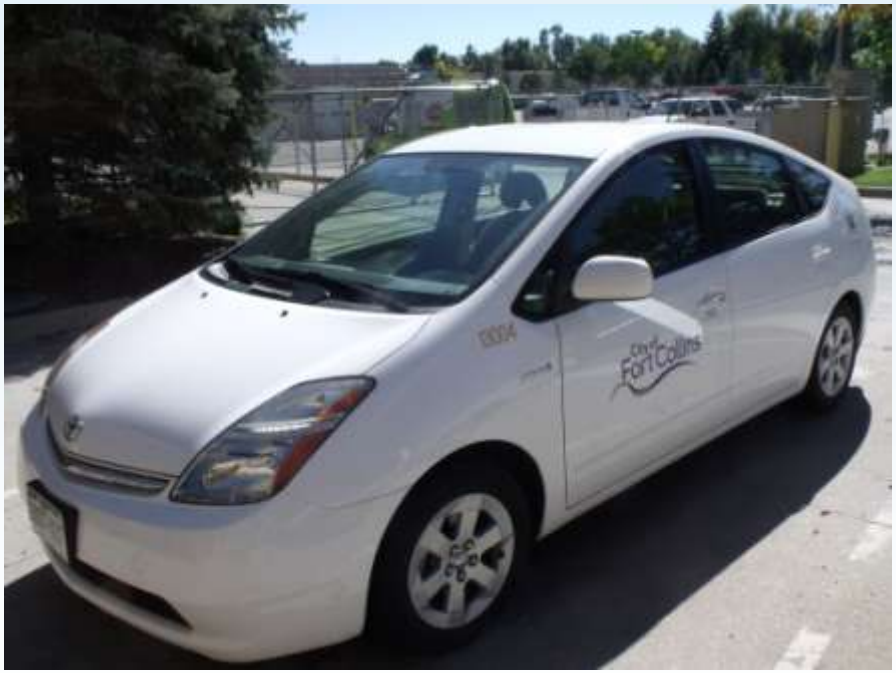
Goal - Example

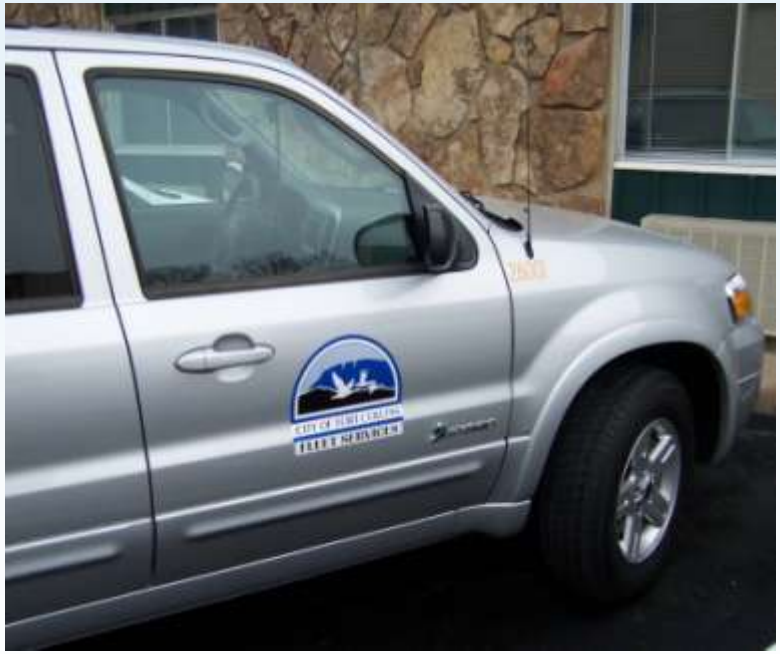
- Greenhouse Gas Goal
  - Reduce the City's Greenhouse Gases 20% by 2020
    - Baseline year is 2005
    - Does not account for growth
    - About 1½ % per year reduction
    - Consistent with a Community Goal

City of Ft Collins
Electric/ Hybrid Fleet

- Hybrid Cars – 38
- Plug in Hybrids – 6
- Hybrid Trucks – 1
- Neighborhood Electric Vehicles – 4
- Electric Trucksters – 16
- Golf Carts – 103

Hybrid Cars (38)





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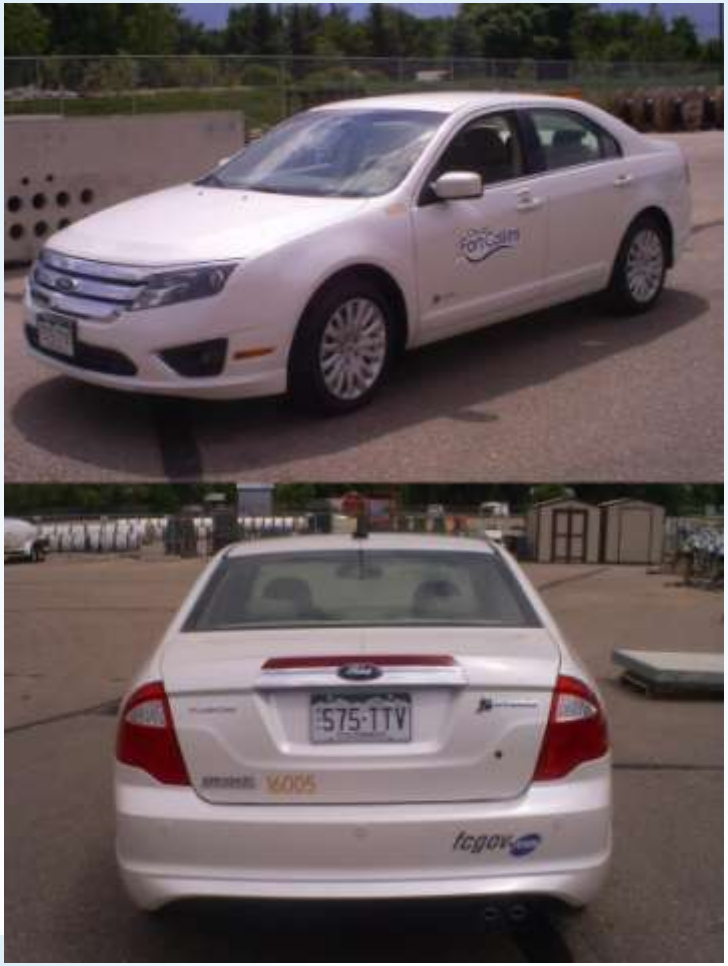
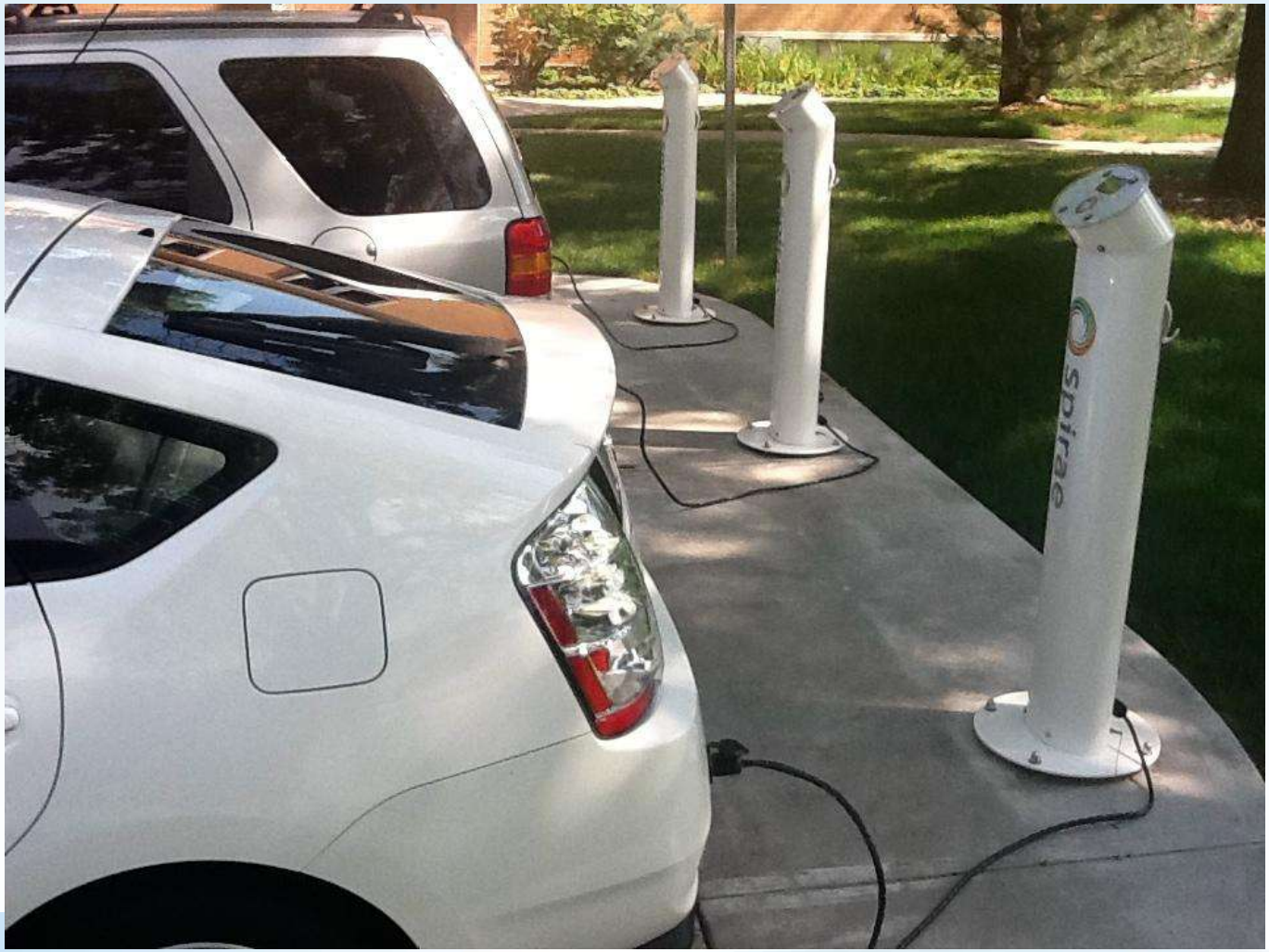


Plug-in Hybrids (6)



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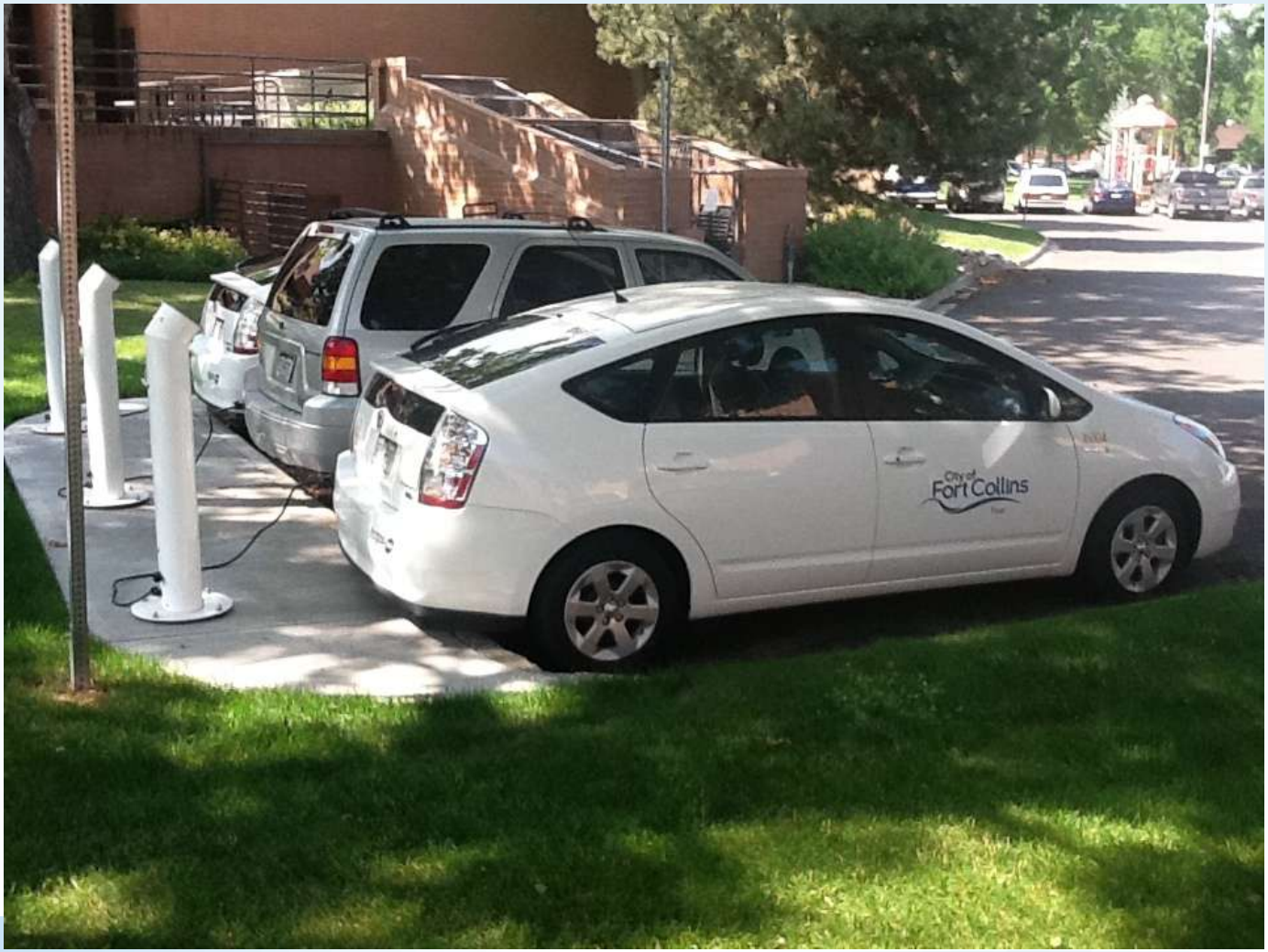

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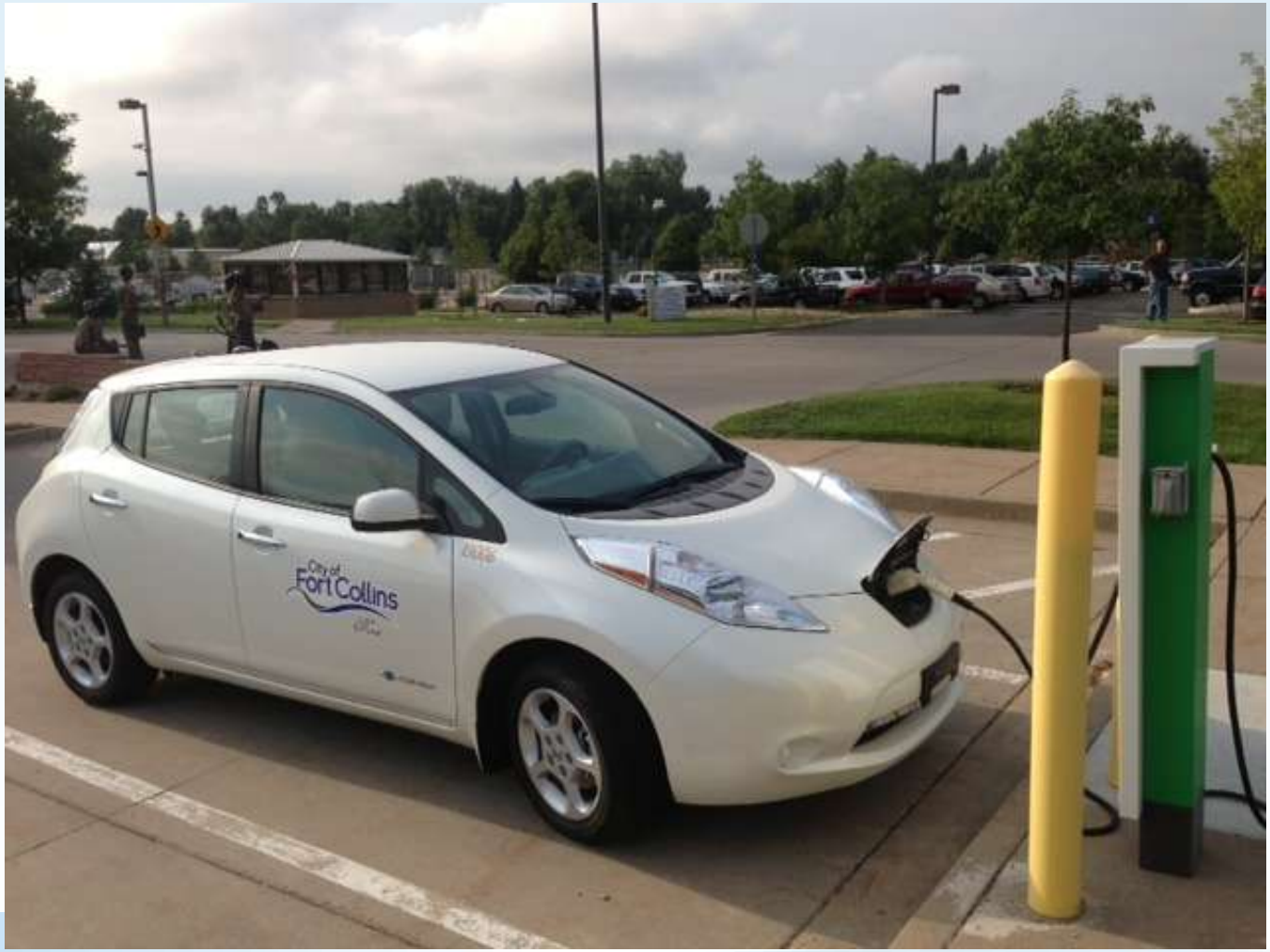
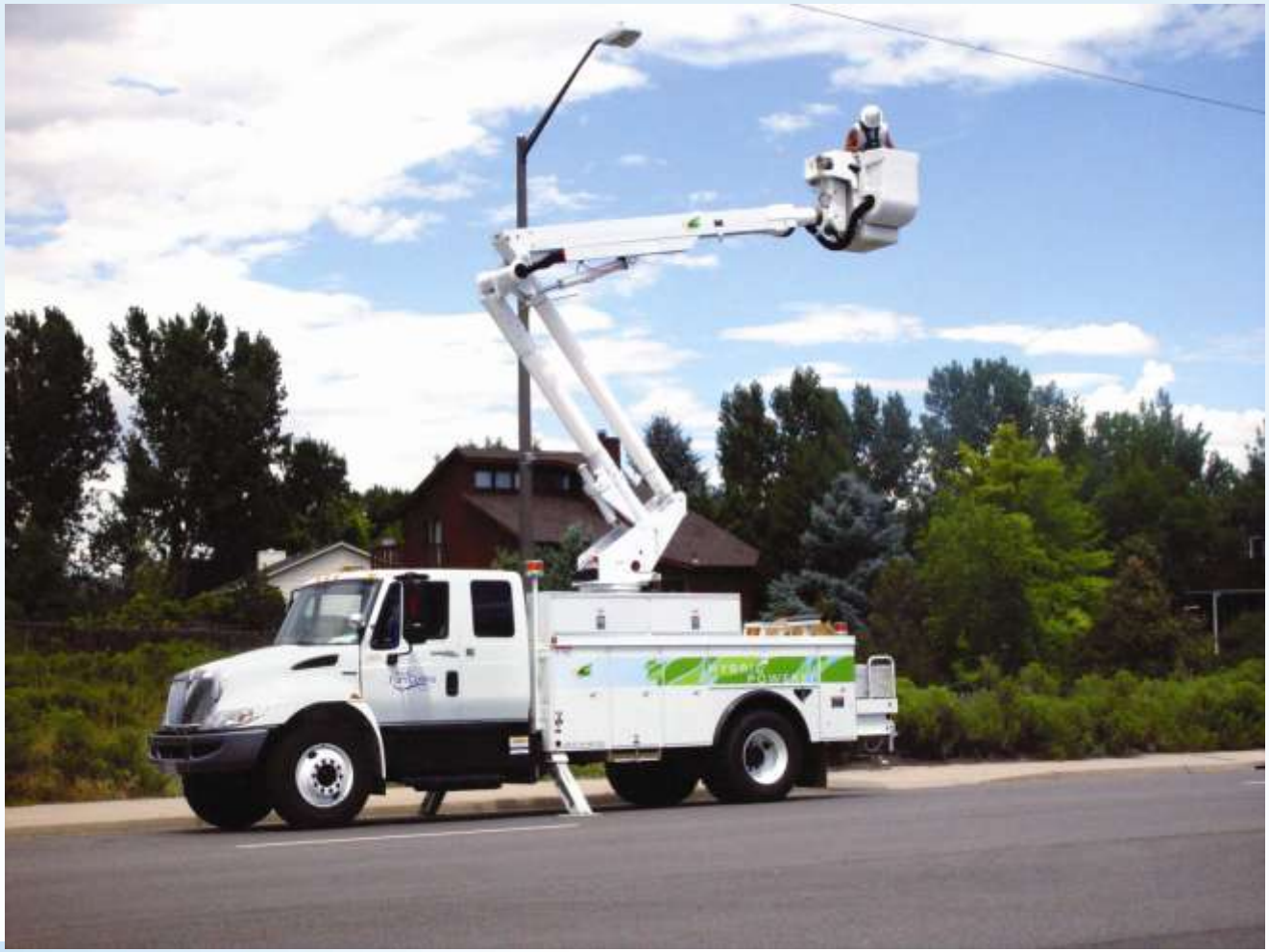
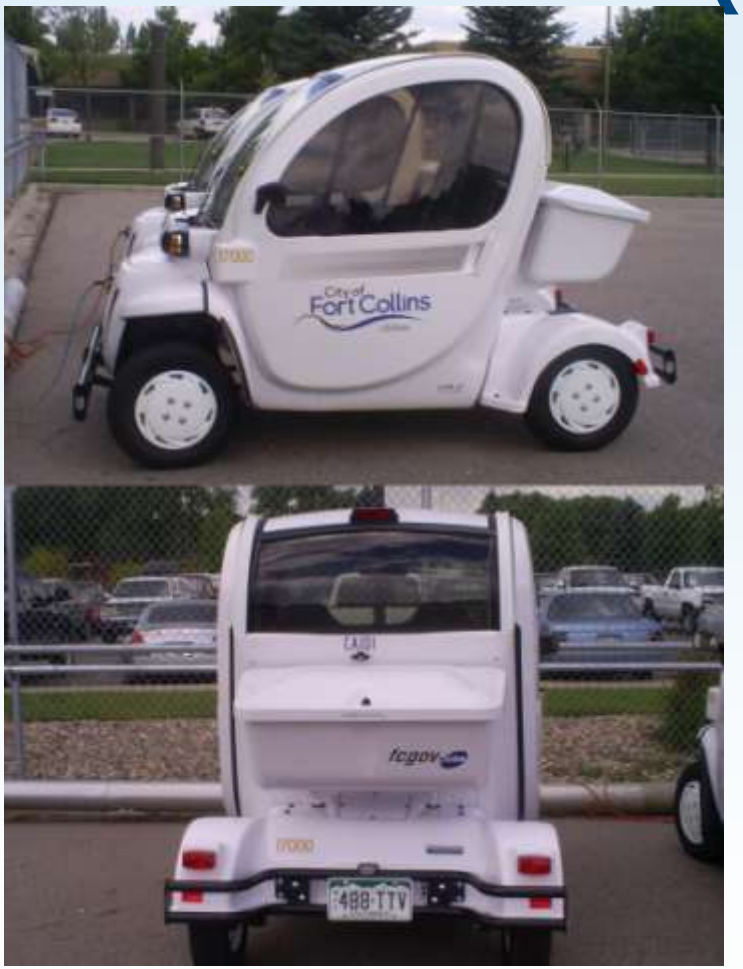


Hybrid Truck (1)



Neighborhood or Plant Electric Vehicles (4)



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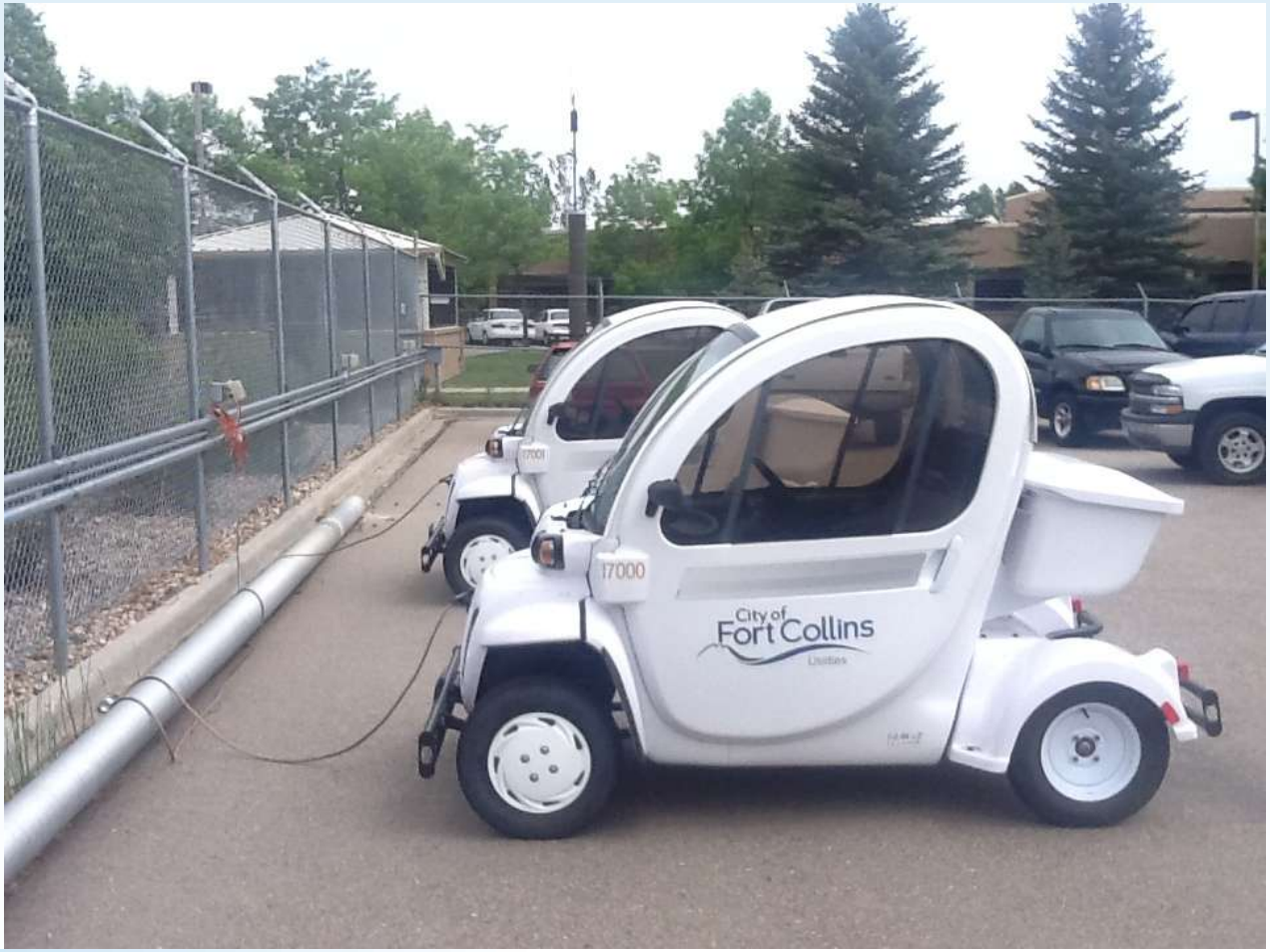
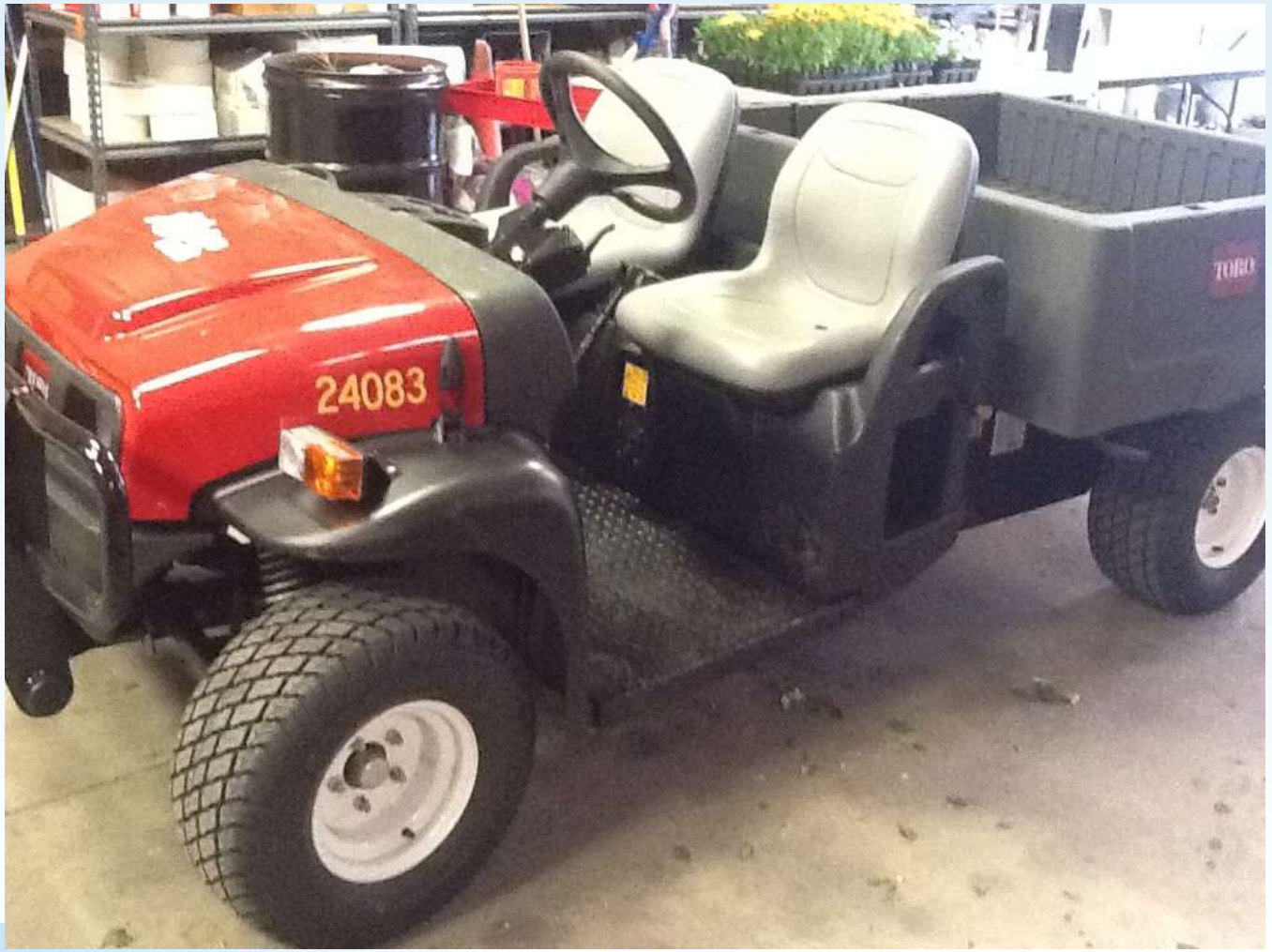


Electric Trucksters (16)



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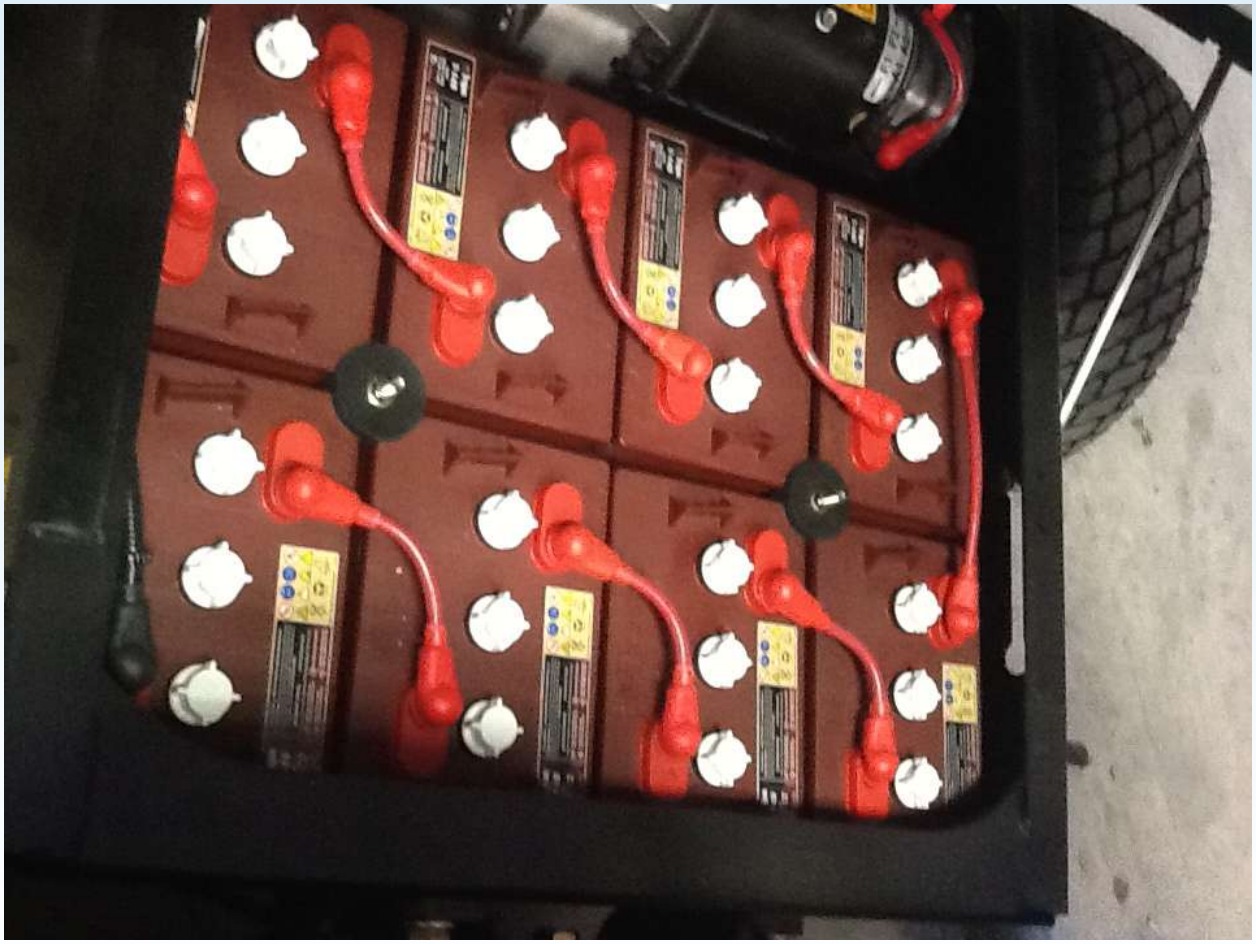
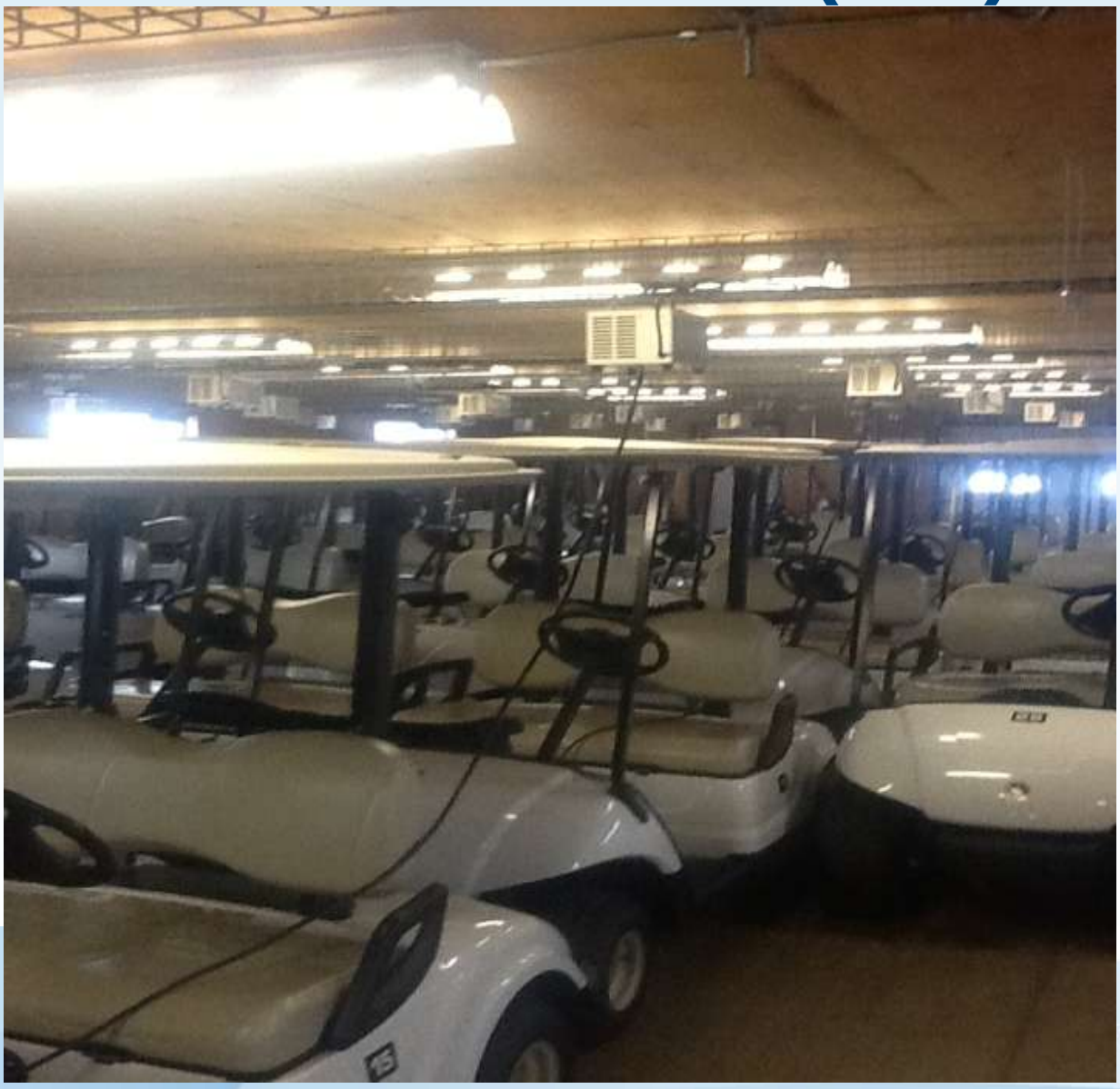


Golf Carts (103)



Lessons Learned

- Get employees to try driving an electric vehicle it usually changes their perception. EV smile
- For a fleet application, expensive charging pedestals may not be necessary.
- Consider strategies for non-peak charging
- Seek out “champions” for the cause. Hopefully, these are also the decision makers.
- Look for the best fit (application) for your fleet.

Thank you

Any Questions????

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IS AN PEV RIGHT FOR YOUR BUSINESS?

- Are you trying to be “green?”
- Do you want reliable transportation?
- Are your daily driving needs between 15 & 60 miles/day
- Are you trying to reduce operating costs?

- A PEV is good option
- A PEV is a good option
- A PEV is a good option
- A PEF may or may not be right for you

It's 'Cost-Effective' if you assign an EV to the right duty

- **Our Shared Motor Pool eliminated of 32 underutilized vehicles with 16 (average O&M cost was $2.04/mile)**
- **Two EV's replaced eight of these vehicles. The est. total cost of ownership for EV is $.28/mi (based on 4,000 miles/yr. utilization; $.18/mi based on 6,000 miles/yr.)**
- **Three more EV's were just put into service, replacing three internal combustion (IC) vehicles (Meter Readers)**
- **Approximately 10 people now share one EV for local transportation needs, of which six vehicles were assigned and three employees received mileage reimbursement.**
- **1st year's utilization of one EV was approximately 3,500 miles (other one 500 mi)**
- **Previous year's fuel consumption on eight IC vehicles replaced by one EV was 1,200 gallons @ $4,225, producing 762 tons GHG carbon**
- **1st year's mileage reimbursement for whole City dropped by $8,106**
- **1st year's vehicle O&M cost (on 32 old, high maintenance units) was reduced $160,000 (10-yr proj. savings @2.7M)**
- **One year's O&M cost for each EV was $355 + depreciation @ 4,000 = $.28/mi. compared to $2.04/mile.**

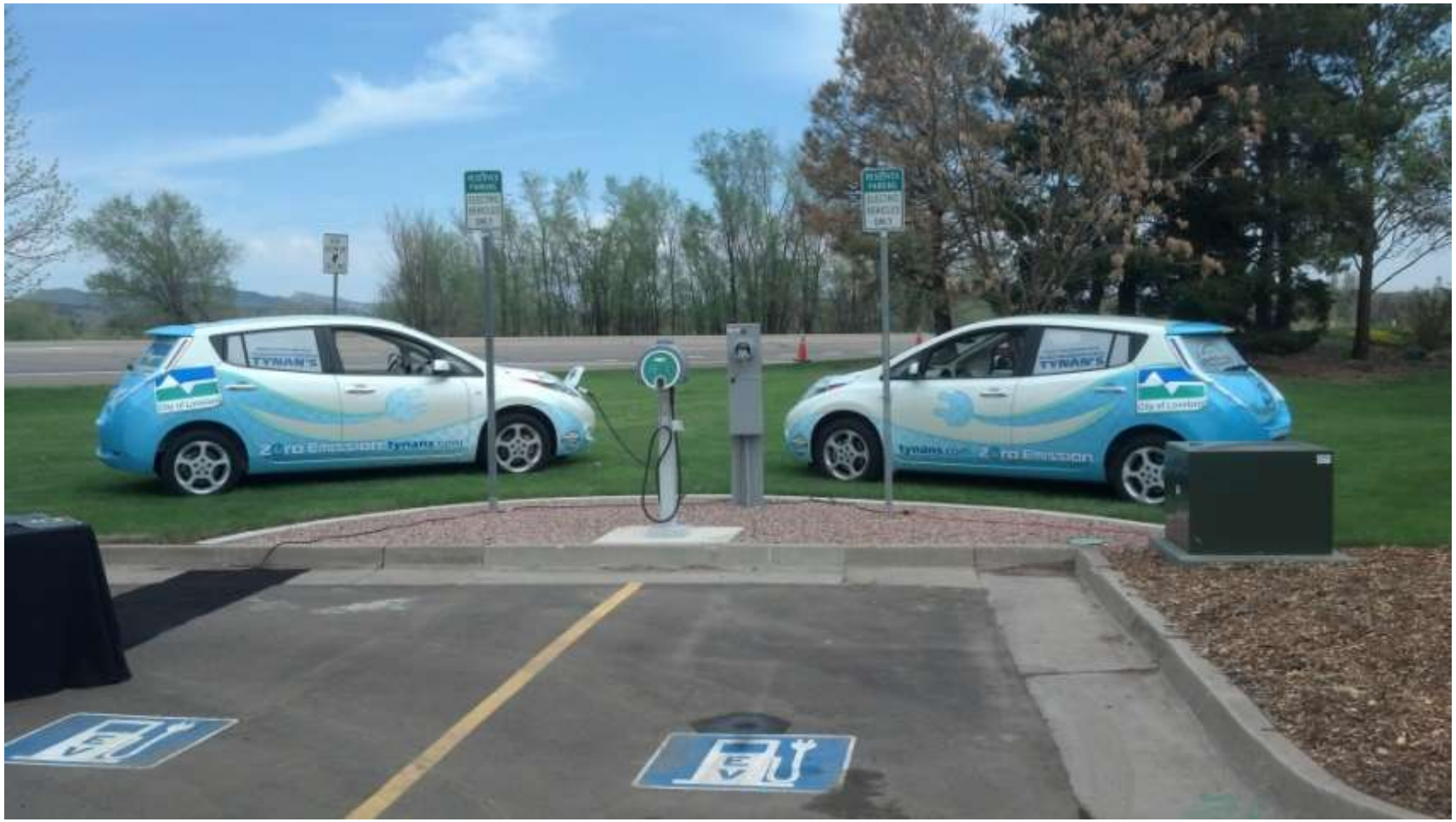
How Loveland Set Their Life Cycle

- Target 4,000 mi/yr. utilization for 3-years
- Capital = $21,301 (-33% MSRP of $31.7K)
- O&M = $350/yr. (yrs.1-4)
- Residual values:
- @ 2yrs averages 70% of MSRP
- @ 3 yrs. averages 60% of MSRP
- @ 4yrs averages 45% of MSRP
- @ 5yrs averages 35% of MSRP

- 271 working days/yr. X 15 miles/day = 4,000

- Total cost of ownership: $0/mile; made $203 profit
- Total cost of ownership $.28/mile
- Total cost of ownership $.53/mile
- Total cost of ownership $.60/mile

Eye-Catching Graphic Wrap



GHG equivalency for EV

- **A Leaf uses 34 kWh to go 100 miles (3.6 miles/kWh @ $.03/kWh) = $3.00**
- **The average MPG on the 32 eliminated vehicles was 7 MPG. For 100 miles each used 14.3 gallon (@$3.50/gallon X 14.3) = $50.00**

- **(PRPA) Power plant electric generation for a PEV calculates down to 233 grams/mile @ 4,000 miles usage = only .932 metric ton of CO_2/yr. (< 1 metric ton of GHG)**

- **Internal combustion engine (8,887 grams/gallon @ 7MPG = 1,270 grams/mile) @ 4,000 miles/year, calculates to 5,080 metric tons of CO_2/yr.**

- **Next time someone admonishes;** *"Well, that's just a coal powered car"* **respond with; Yes, but the coal used to create the power produced 99.9% less pollution than a like-sized gasoline powered vehicle… OR - - Yes, but a PEV is 5,000 times cleaner than 1999 IC sedan…**

- **EV's can and should be slotted into daily duty-cycles of 100 miles or less**

- **What's currently preventing this?**
  - **Charging station infrastructure and range anxiety (both fixable)**