The City of Elk River received a SEED grant from the Metro Clean Energy Resource Team (CERT) to create this guide. The goal is to assist communities with the tools needed to create greener city fleets. The guide has a strong focus on electric vehicles because we see that as the technology of today and the future.

**Alternative Fuel Vehicles**

An alternative fuel vehicle is a vehicle that runs on a fuel other than traditional petroleum fuels (gasoline or diesel); and also refers to any technology of powering an engine that does not involve solely petroleum.

**Battery Electric Vehicles**

This is your classic Electric Vehicle (EV). Battery electric vehicles (BEVs) are powered only by one or more electric motors. They receive electricity by plugging into an outlet and store it in batteries. They consume no petroleum-based fuel while driving and produce no tailpipe emissions.

**Plug-In Hybrid Electric Vehicles**

Plug-in hybrid electric vehicles (PHEVs) uses rechargeable batteries to power an electric motor, plug into the electric outlet to charge, and use a petroleum based or alternative fuel to power an internal combustion engines (ICE) or other propulsion source.

**Hybrid Electric Vehicles**

Hybrid electric vehicles (HEVs) combine an internal combustion engines (ICE) or other propulsion source with batteries, regenerative braking, and an electric motor to provide high fuel economy. They rely on a petroleum-based or alternative fuel for power and are not plugged in to charge.

**Fuel Cell Electric Vehicles**

Fuel cell electric vehicles (FCEVs) use hydrogen gas to power an electric motor. Unlike conventional vehicles which run on gasoline or diesel, fuel cell cars and trucks combine hydrogen and oxygen to produce electricity, which runs a motor.

**Additional Fuel Efficient Fleet Suggestions**

- Conduct a Fleet Inventory and assessment
- **Right Size** your fleet
- Initiate a **No Idling Policy**
- Educate your drivers to **Drive Efficiently**
- Conduct **Regular Maintenance**
- Convert to **Biofuels**
- Join **Project Green Fleet** to reduce heavy diesel emissions
- Encourage **Car Pooling, Telecommuting**, and non-vehicle commuting
- Advertise your green fleet with vehicle wraps

**Note:** Plug-in Electric Vehicles (PEVs) include BEVs and PHEVs.
Numerous international auto makers such as Nissan, BMW, Ford, Chevrolet, and Tesla have invested in the market for alternative fuel vehicles. Their alternative fuel vehicles come in various shapes, sizes, prices, and ranges.

For example:

<table>
<thead>
<tr>
<th>Model</th>
<th>Type</th>
<th>MSRP</th>
<th>Price After Tax Credit</th>
<th>Total Range (Miles)</th>
<th>MPG/MPGe*</th>
<th>Annual Fuel Cost**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nissan Leaf</td>
<td>All-Electric</td>
<td>$29,010</td>
<td>$21,510</td>
<td>84 or 107</td>
<td>112/114 MPGe</td>
<td>$600</td>
</tr>
<tr>
<td>BMW i3</td>
<td>All-Electric</td>
<td>$42,400</td>
<td>$34,900</td>
<td>81 or 150</td>
<td>118/124 MPGe</td>
<td>$550</td>
</tr>
<tr>
<td>Tesla Model S</td>
<td>All-Electric</td>
<td>$66,000</td>
<td>$58,500</td>
<td>208 or 315</td>
<td>89/99 MPGe</td>
<td>$650-750</td>
</tr>
<tr>
<td>Ford Focus</td>
<td>All-Electric</td>
<td>$29,120</td>
<td>$21,620</td>
<td>100</td>
<td>105 MPGe</td>
<td>$600</td>
</tr>
<tr>
<td>Chevrolet Bolt</td>
<td>All-Electric</td>
<td>$36,620</td>
<td>$29,120</td>
<td>238</td>
<td>119 MPGe</td>
<td>$550</td>
</tr>
<tr>
<td>Chevrolet Volt</td>
<td>Plug-in Hybrid</td>
<td>$33,220</td>
<td>$29,720</td>
<td>53 electric 420 combined</td>
<td>106 MPGe 42 MPG</td>
<td>$650</td>
</tr>
<tr>
<td>Fore C-Max Energi</td>
<td>Plug-in Hybrid</td>
<td>$31,950</td>
<td>$27,763</td>
<td>21 electric 550 combined</td>
<td>88 MPGe 38 MPG</td>
<td>$800</td>
</tr>
</tbody>
</table>

*MPGe is Miles Per Gallon Equivalent and is used by the Environmental Protection Agency (EPA) to equate the power used by an electric vehicle in a standard known by Americans.
**Based on 45% highway, 55% city driving, 15,000 annual miles and current fuel prices.

Note: Talk with your utility to find out if other discounts, like “time-of-use rates”, apply. You may see a 50% fuel cost reduction.

For more pricing visit PlugInConnect, Drive Electric MN or FuelEconomy.gov.
High Fuel Economy, Low Fuel Cost
PEVs can reduce your fuel costs dramatically. Depending on how they’re driven, today’s PEVs can exceed 100 MPGe (miles per gallon of gasoline equivalent).

<table>
<thead>
<tr>
<th>Mode</th>
<th>Cost Per Mile (Cents)</th>
<th>200 miles cost (dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electric</td>
<td>3-5</td>
<td>$6-10</td>
</tr>
<tr>
<td>Gas</td>
<td>14</td>
<td>$28</td>
</tr>
</tbody>
</table>

Charge Anywhere, Anytime
With PEVs, you have multiple options to fuel your car. Charge at home, at work, or along your travel route. A network of public PEV charging stations is being established in cities, in both public and private sectors. This enables you to top off your PEV’s batteries in just a few minutes with a fast charging station while you work or shop. Please visit this link to learn more about the different charging stations.

Energy Security
PEVs can help make the United States more energy independent. Today, our cars depend almost entirely on petroleum. However, U.S. petroleum production hasn’t kept pace with demand, so we import more than 60% of our petroleum. The transportation sector accounts for two-thirds of our petroleum consumption. With much of the world’s petroleum reserves located in politically volatile countries, our reliance on petroleum make us vulnerable to price spikes and supply disruptions. PEVs help reduce this threat because almost all U.S. electricity is produced from domestic coal, nuclear, natural gas, and renewable sources (currently over 21% in MN).

Low Emissions
PEVs can help keep your community and your world clean. Conventional vehicle emissions create smog-forming pollutants such as greenhouse gases (GHGs), primarily carbon dioxide. When PEVs are driven in all-electric mode, they produce zero emissions - a great pollution reduction benefit for urban areas.

High Performance
In all-electric mode, PEVs are much quieter than conventional vehicles. PEVs are also able to warm up much faster than non-electric vehicles. With the battery pack located in the chassis, PEVs handle nimbly while also producing maximum torque and smooth acceleration from a full stop.

Maintenance
EVs typically require less maintenance than conventional vehicles. The battery, motor, and associated electronics require little to no regular maintenance, there are fewer fluids to change, brake wear is significantly reduced due to regenerative braking, and there are far fewer moving parts, relative to a conventional gasoline engine. These cost savings allow for faster payback of an electric fleet. In addition, time spent on maintenance is reduced.

Info Credit:
U.S. Department of Commerce
Financial Incentives

You can reduce the cost of purchasing PEVs through government incentives. The federal **Qualified Plug-In Electric Drive Motor Vehicle Tax Credit** is available for PEV purchases. It provides a tax credit of $2,500 to $7,500 for new PEV purchases, with the specific credit amount determined by the size of the vehicle and the capacity of its battery. Moreover, depending on your location, you may qualify for **state and local incentives**. **Charging infrastructure** also has a number of grant and statewide contracting (E-108(5)) available.

National & Global Trends

**British Columbia’s new incentive to make clean energy vehicles more affordable**

**Germany Needs Emissions-Free Car Fleet by 2030, Official Says**

**City of Los Angeles’s Electric Fleet**

**Japan now has more electric car charge points than petrol stations**

**California transit agency adds it first all-electric buses**

**Ontario Paves the Way For Electric Vehicles**
Community Comparison

The City of Elk River created an online survey with nine questions to evaluate Minnesota communities’ fleets. GreenStep Cities responded to the survey, including Woodbury, Eden Prairie, Maplewood, Red Lake Nation, Rogers, Arden Hills, Mounds View, Shoreview, Coon Rapids, Rosemount, St. Anthony, Hastings, Fridley, Winthrop, Cologne, Hutchinson, North St. Paul, and Hermantown participated in the survey.

Does your city own or lease any hybrids?

- Yes: 62%
- No: 38%

Does you City manage it’s own fleet?

- Yes: 6%
- No: 89%
- Some: 5%

Does your city own or lease any EVs?

- Yes: 22%
- No: 78%

Partnership Resources

- **Minnesota Green Step Cities** is a voluntary challenge, assistance and recognition program to help cities achieve their sustainability and quality-of-life goals. Best Practice #13 is for efficient city fleets.

- The **Clean Energy Resource Teams** (CERTs) is a statewide partnership with a shared mission to connect individuals and their communities to the resources they need to identify and implement community-based clean energy projects.

- **Drive Electric MN** is a partnership of Minnesota’s electric vehicle champions, dedicated to encouraging the deployment of EVs and the establishment of EV charging infrastructure through public-private partnerships, financial incentives, education, technical support and public policy.

- **PlugInConnect** offers training and consulting in the areas of EV market and technologies, charging infrastructure, renewable charging solutions, Vehicle to Grid (V2G) technologies, commercial plug-in vehicles, and EV related product and business strategies.

- **Fresh Energy** is an non-profit organization working to speed the transition to a clean energy economy.

- The **Minnesota Retiree Environmental Technical Assistance Program** (RETAP) employs skilled, retired professionals to provide facility assessments and community sustainability assistance to small businesses, institutions, and communities in Minnesota.

- **Minnesota Pollution Control Agency** (MPCA) monitors environmental quality, offers technical and financial assistance, and enforces environmental regulations. The agency finds and cleans up spills or leaks that can affect our health and environment. Staff develop statewide policy, and support environmental education.

- **Deptartment of Energy** provides valuable resources for fuel efficiency and alternative fuel vehicles.

- **FleetCarma** is an all-in-one telematics platform for fleets, utilities, and researchers. Track your vehicles, compare fleet vehicle options (including EV), and gather data.