Expanding Charging for MN Fleets, Workplaces, Multi-Unit Dwellings and Public Locations

December 4, 2020
10:00am - 12:00pm CT

Drive Electric MINNESOTA

Plug In America

Xcel Energy

SUSTAINABLE GROWTH COALITION

Technology Reminders:

- Please type any questions into the chat or Q&A button - questions are welcome!
- All attendees will be muted and have their videos turned off until the Q&A session.
- The presentations and recordings will be available on the Plug In America and the Drive Electric MN websites.

Drive Electric MINNESOTA

Plug In America

Xcel Energy

SUSTAINABLE GROWTH COALITION

Minnesotans Going Electric

A Free Six-Part Webinar Series

December 1-4, 2020

1. **The Role of Cities and Counties in the Shift to Transportation Electrification**
   - December 1, 2020 11:00am - 12:30pm CT
2. **The 101 on Electric Vehicles in Minnesota**
   - December 1, 2020 1:00pm - 2:00pm CT
3. **Experience Electric Vehicles in a Virtual Test Drive**
   - December 1, 2020 2:15pm - 3:00pm CT
4. **How Minnesota Can Lead on Transportation Electrification in 2021**
   - December 3, 2020 10:00am - 12:00pm CT
5. **Economic Development Opportunities for MN from the Transportation Electrification Sector**
   - December 3, 2020 1:00 - 2:30pm CT
6. **Expanding Charging for MN Fleets, Workplaces, Multi-Unit Dwellings and Public Locations**
   - December 4, 2020 10:00am - 12:00pm CT

Minnesotans Going Electric

Thank you to our partners!

Minnesotans Going Electric

Thank you to our partners!

Minnesotans Going Electric

A Free Six-part Webinar Series

December 1-4, 2020

Register at

https://www.driveelectricmn.org/webinar-series-minnesotans-going-electric/

Drive Electric MINNESOTA

Plug In America

Xcel Energy

MINNESOTA SUSTAINABLE GROWTH COALITION

Plug In America

- **<u>The voice of the EV consumer</u>** – in Minnesota and nationwide
- 501c3 nonprofit founded in 2008
- Our members represent the world's deepest pool of experienced EV drivers
- Two core areas:
  1. Policy and Advocacy
  2. Education and Outreach
     - PlugStar: dealers, consumers, utilities
     - National Drive Electric Week and Drive Electric Earth Day

Our Speakers:

Dean Taylor
Senior Policy Advisor
Plug In America

Nadia El Mallakh
Area Vice President, Strategic Partnerships and Ventures
Xcel Energy

Katherine Stainken
Policy Director
Plug In America

Mathias Bell
EV Strategy and Initiatives
Xcel Energy

Bill Black
Government Relations Attorney
Minnesota Municipal Utilities Association

Drive Electric MINNESOTA

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Our Speakers:

Anders Thulin
Business Development Manager
Siemens

Jukka Kukkonen
Chief EV Educator
Shift2Electric

Carrie Desmond
Principal Engineer
Metro Transit

Jordan Baynard
Procurement Manager
Ecolab

Marcus Grubbs
Enterprise Sustainability Planner
MN Dept of Administration

Siri Simons
Principal Sustainability Planner
MN Dept of Transportation

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Speaker bios:

- **Dean Taylor** is a senior policy advisor for **Plug in America**. He has 30 years of transportation electrification (TE) experience with a focus on regulatory and legislative affairs, external engagement, business planning, strategy development and utility program design (mostly for Southern California Edison and for his own consulting practice since March 2019). He has chaired many regulatory and TE coalitions (e.g., over 14 years with California's Low Carbon Fuel Standard, the 2008 federal EV tax credit coalition), and designed and project managed dozens of technical, environmental and business planning TE studies.
- **Nadia El Mallakh** is Colorado Community & Customer Partnerships Lead/Assistant General Counsel for **Xcel Energy**. Before joining Xcel Energy, Nadia was in private practice at the international law firm of Gibson, Dunn & Crutcher LLP.
- **Katherine Stainken** is Policy Director for **Plug In America**. Prior to her work at Plug In America, Katherine was a Director of Government Affairs at the Solar Energy Industries Association (SEIA), focused on policies to promote solar on the federal level as well as southeast and northeast regions, along with regulatory work at federal agencies. Katherine was also the chief liaison to the solar heating and cooling and EH&S groups at SEIA. She is former Fulbright and Thinkswiss scholar.
- **Mathias Bell** is EV Program Lead at Xcel Energy, helping lead the Company's EV program strategy and policy work. Previously, Mathias held positions at Opower, Rocky Mountain Institute, and Carleton College.
- **Bill Black** is Government Relations Attorney for the **Minnesota Municipal Utilities Association**. Bill lobbies at all levels of government on behalf of publicly owned utilities & provides them with legal and regulatory support.

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Speaker bios:

- **Anders Thulin** is a **Siemens** eMobility account manager supporting North American Utilities, Transits, and other fleet operators in electric vehicle charging infrastructure project deployment. Prior to his current role, Anders spent 12 years developing Wind Power, Aerospace, and military defense projects in Washington D.C., Orlando, and Aarhus, Denmark.
- **Jukka Kukkonen** is Chief EV Educator for **Shift2Electric** and teaches EV Market and Technologies at the **University of St Thomas**. He is also EV Expert for **Fresh Energy** and coordinates the **Minnesota EV Owners group.**
- **Carrie Desmond** is a Principal Engineer at **Metro Transit.** She is part of the support facilities engineering team. She is a project manager responsible for electric bus charging infrastructure and construction of the new Minneapolis Bus Garage.
- **Jordan Baynard** is an Indirect Procurement Manager at **Ecolab's** global headquarters in Saint Paul, MN. He has managed the Light Fleet category for Ecolab over the past year and has 5+ years prior to that with the company in a variety of commercial roles. Jordan held accounting and finance roles at several Fortune 500 companies in Twin Cities, MN out of school and prior to joining Ecolab.
- **Marcus Grubbs** is Planning Director in the Office of Enterprise Sustainability in the **Dept of Administration** at the State of MN. He works with stakeholders across the enterprise to further sustainability goals in their agencies including fleet planning and electric vehicle supply equipment installation.
- **Siri Simons** is the Principal Sustainability Planner in **MnDOT's** Office of Sustainability and Public Health. She leads coordination of sustainability planning and implementation to meet fleet fuel use, greenhouse gas emissions reduction, and other sustainability targets for MnDOT operations.

Agenda:

10:00	Welcome	Dean Taylor	Plug In America
10:03	Vision for 2030	Nadia El Mallakh	Xcel Energy
10:13	Minnesota Compared to Other States	Katherine Stainken	Plug In America
10:18	Programs in MN	Mathias Bell	Xcel Energy
10:38	MN Public Utility Programs	Bill Black	MN Municipal Utility Association
10:48	Site Host 101	Anders Thulin	Siemens
Break			
11:03	Apartments and Condos	Jukka Kukkonen	Drive Electric MN
11:13	Case Study	Carrie Desmond	Metro Transit
11:19	Planning	Jordan Baynard	Ecolab
11:24	Case Study	Marcus Grubbs Siri Simons	MN Dept of Administration MN Dept of Transportation
11:43	Q&A		
11:58	Closing	Dean Taylor	Plug In America

Drive Electric MINNESOTA

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Xcel Energy

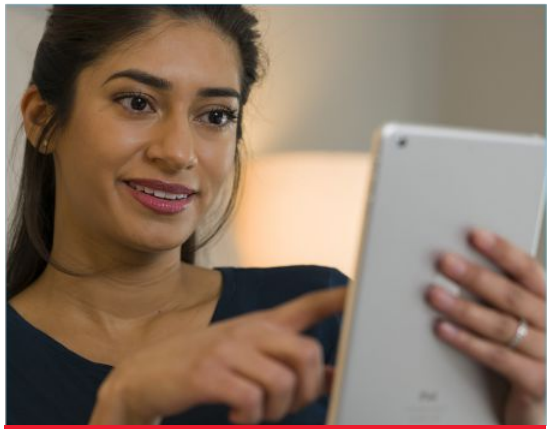
SUSTAINABLE GROWTH COALITION


Xcel Energy®
BUILDING THE ENERGY FUTURE
CLEAN, SAFE, RELIABLE
December 2020

Xcel Energy Priorities

Lead the Clean Energy Transition

Enhance the Customer Experience



Keep Bills Low

Our Electric Vehicle Vision

1.5 MILLION EVs

On the road in the areas we serve by 2030

$1 BILLION

In customer fuel savings annually by 2030

$1 OR LESS PER GALLON

To drive an EV with Xcel Energy's low, off-peak electricity prices

5 MILLION TONS OF CARBON EMISSIONS

Eliminated annually by 2030 with our clean energy

Plug In America

WE DRIVE ELECTRIC. YOU CAN TOO.

What the EV Driver Needs: the Top 25 States Leading the Way

December 4, 2020

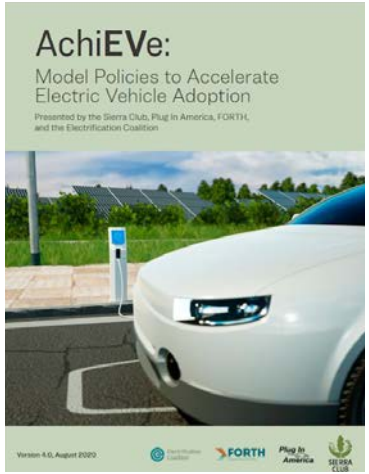
Katherine Stainken, Policy Director

Who we are

- **<u>The voice of the EV consumer</u>** – in Minnesota and nationwide
- 501c3 nonprofit founded in 2008
- Our members represent the world's deepest pool of experienced EV drivers
- Two core areas:
  1. Policy and Advocacy
  2. Education and Outreach
     - PlugStar: dealers, consumers, utilities
     - National Drive Electric Week and Drive Electric Earth Day

What the EV Driver Needs: Top 25 States Leading the Way

- We update our AchiEVe: Transition to EVs Model Policy Toolkit every year.
  - 2020 is the 4.0 version
  - shows what the best practice policies are
- **How can we encourage states to be BOLD in their policies for 2021 to support the EV Driver?**
- Highlight the leadership and policies in the top states, encourage the bottom ranking states.
- Focus on policies for the light-duty EV driver (no MHD or bus policies).



Categories of Policies for the EV Driver

Category	Breakdown
Policies Supporting EV Driver Pre-Purchase	EV purchase incentive
	Access to clean cars
	HOV lane access and/or toll exemption
	Creative Ideas
Policies Supporting EV Driver During Ownership	Fair EV fee
	Clean fuels policy
	Public EVSE Requirements on Payment Methods
	Favorable EV charging rates at utility
	Physical Access to EVSE
Policies Enabling EV Infrastructure	Utility enabling legislation
	EVSE rebates
	Building codes for EVSE readiness
	Creative Infrastructure Solutions
	Targets and goals for EVSE
	Corridor policies
Education and Outreach Activities	Significant state funding for E&O
	City level E&O campaigns
	Strong utility E&O budgets
	Partnerships and programs to train dealers

How does MN compare?

Category	Breakdown	Minnesota	California	New Jersey
Policies Supporting EV Driver Pre-Purchase	EV purchase incentive	No	Yes	Yes
	Access to clean cars	No	Yes	Yes
	HOV lane access and/or toll exemption	Yes	Yes	Yes
	Creative Ideas	No	Yes	Yes
Policies Supporting EV Driver During Ownership	Fair EV fee	Yes	Yes	Yes
	Clean fuels policy	No	Yes	No
	Public EVSE Requirements on Payment Methods	No	Yes	Yes
	Favorable EV charging rates at utility	Yes	Yes	Yes
	Physical Access to EVSE	No	Yes	Yes

How does MN compare?

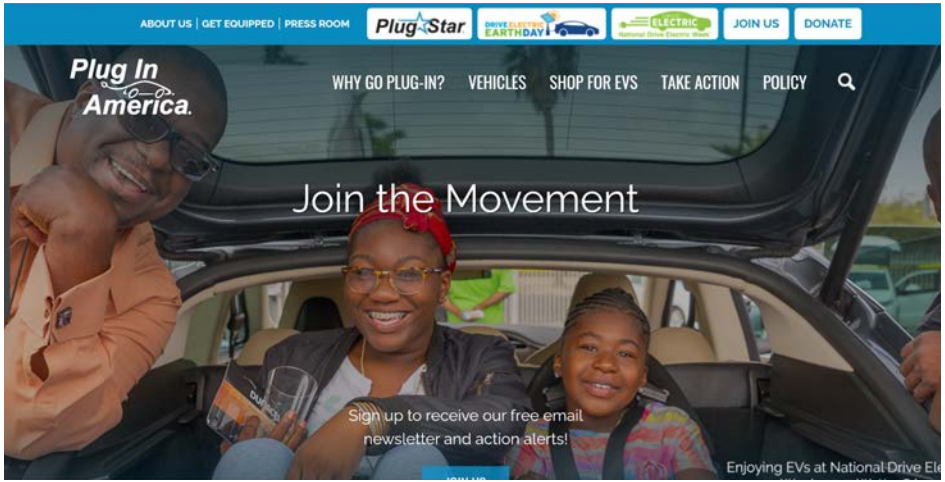
Category	Breakdown	Minnesota	California	New Jersey
Policies Enabling EV Infrastructure	Utility enabling legislation	Yes	Yes	Yes
	EVSE rebates	Yes	Yes	Yes
	Building codes for EVSE readiness	Yes	Yes	No
	Creative Infrastructure Solutions	No	Yes	No
	Targets and goals for EVSE	Yes	Yes	Yes
	Corridor policies	Yes	Yes	Yes
Education and Outreach Activities	Significant state funding for E&O	No	Yes	No
	City level E&O campaigns	Yes	Yes	Yes
	Strong utility E&O budgets	Yes	Yes	Yes
	Partnerships and programs to train dealers	No	Yes	Yes

Stay Tuned! Full report coming Q1 2021.

Katherine Stainken
Policy Director

kstainken@pluginamerica.org

www.pluginamerica.org



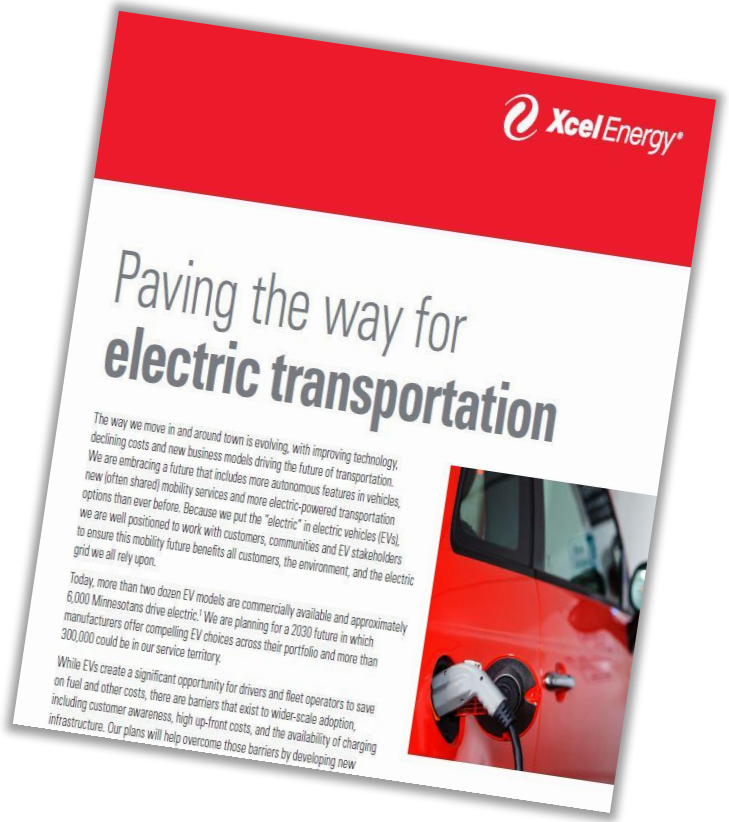
Xcel Energy®

Minnesotans Going Electric

Expanding Charging for Minnesota Fleets, Workplaces, Multi-Unit Dwellings, and Public Locations

December 4, 2020

Our transportation electrification efforts


Xcel Energy®

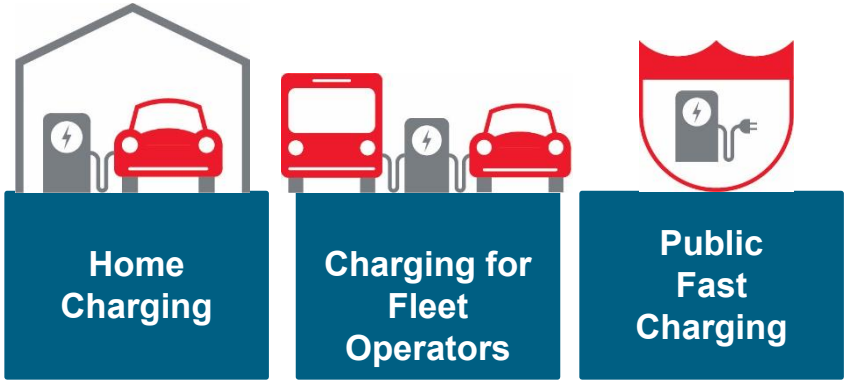
Paving the way for
electric transportation

The way we move in and around town is evolving, with improving technology, declining costs and new business models driving the future of transportation. We are embracing a future that includes more autonomous features in vehicles, new (often shared) mobility services and more electric-powered transportation options than ever before. Because we put the "electric" in electric vehicles (EVs), we are well positioned to work with customers, communities and EV stakeholders to ensure this mobility future benefits all customers, the environment, and the electric grid we all rely upon.

Today, more than two dozen EV models are commercially available and approximately 6,000 Minnesotans drive electric.[1] We are planning for a 2030 future in which manufacturers offer compelling EV choices across their portfolio and more than 300,000 could be in our service territory.

While EVs create a significant opportunity for drivers and fleet operators to save on fuel and other costs, there are barriers that exist to wider-scale adoption, including customer awareness, high up-front costs, and the availability of charging infrastructure. Our plans will help overcome those barriers by developing new

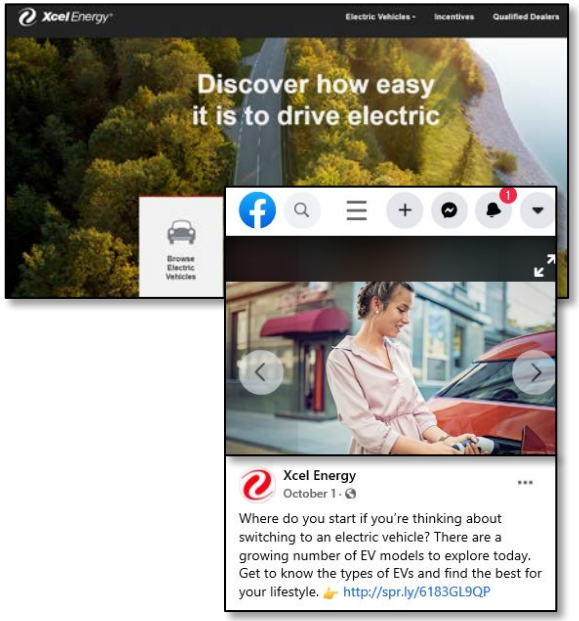
Focus on 3 Market Segments:



Key Barriers to Address:

- Lack of Awareness and Information
- Initial upfront costs
- Suboptimal incentive to charge when energy costs are lowest

Increasing awareness with advisory services

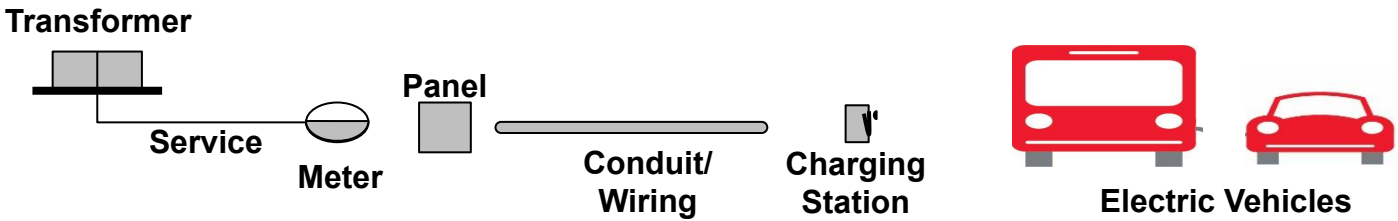


Awareness

Outreach

Education

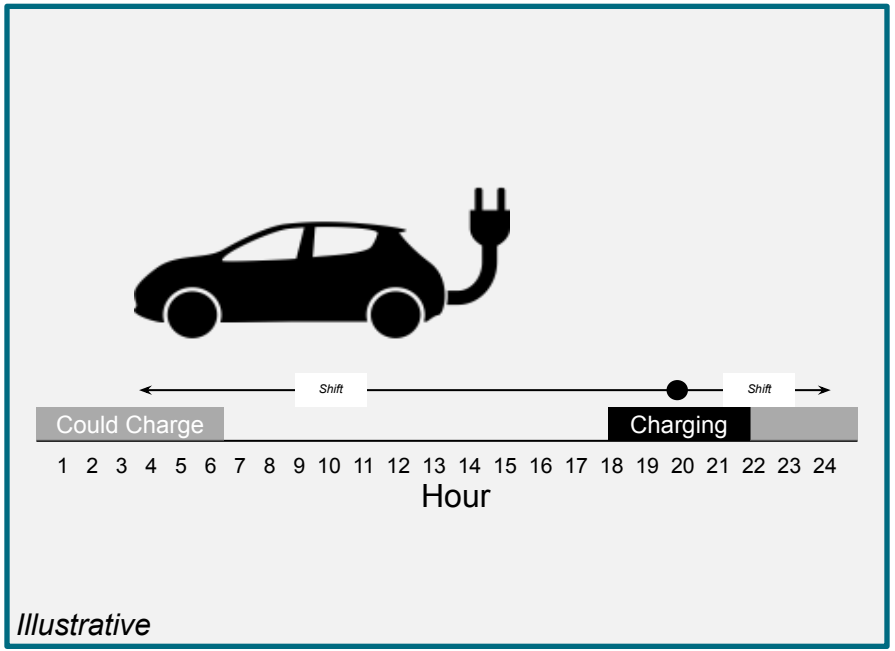
We are providing options for supporting customers



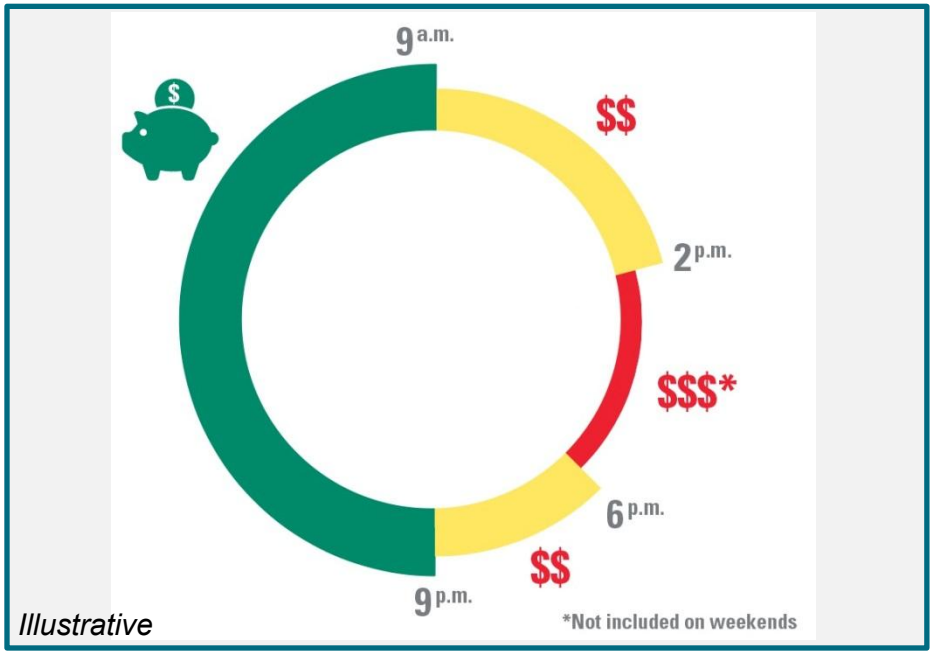
EV Service Connection	EV Supply Infrastructure	Charging Equipment	
Utility	Customer		Line Extension
Utility	Utility	Customer	"Make Ready"
Utility	Customer	Utility	Charger Only
Utility			Full Ownership
Utility	Customer		Rebates

Pricing and Smart Charging to Encourage Charging when System Costs are Lowest

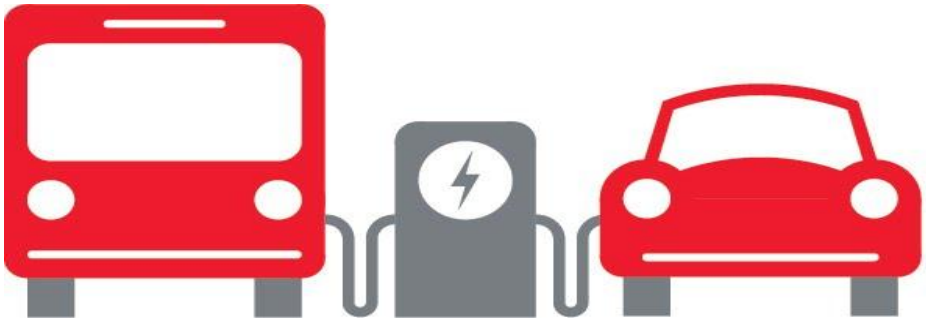
Smart Charging



Time of Use Pricing



Why focus on fleets?



Objective:
Provide new services aimed at reducing total cost of ownership and system costs

Rationale:

- **Size of fleets**
- **Focus on economics**
- **Opportunity to support first-movers**
- **Potential evolution in mobility services that will rely more on fleets**
- **Pilot approaches and establish key learnings that can be scaled to other market segments**

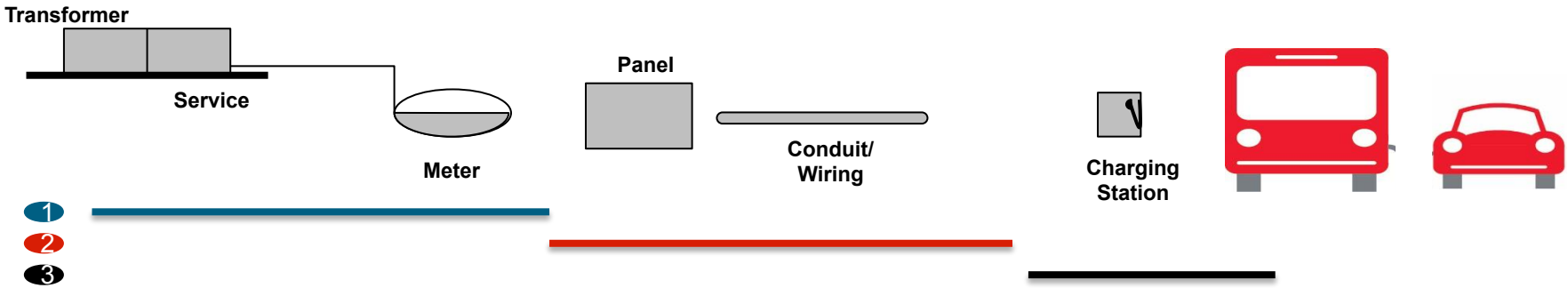
Fleet Electrification Advisory Plan

Analytics and Advisory Services for Vehicles and Infrastructure

Xcel Energy is partnering with a fleet analytics company to help customers:

- Understand fleet needs and highlight opportunities for electrification
- Collect detailed data of fleet vehicle usage on a day-to-day basis
- Assess which EVs can support existing driving patterns
- Develop infrastructure options and make recommendations on charging locations
- Analyze economics and make recommendations based on fleet needs (including rate options)

Fleet EV Pilot

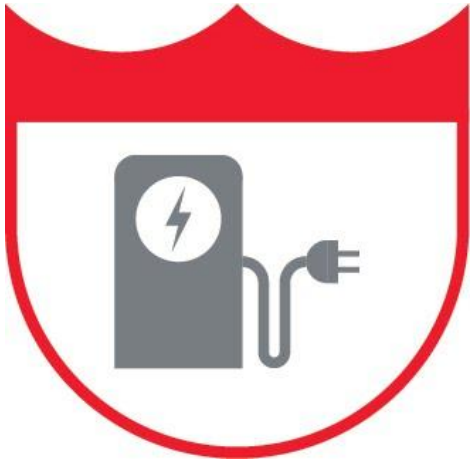


- Utility provides new line of service, including:
  - distribution feed,
  - necessary transformer upgrades,
  - new meter
- This new line of service will only serve EV charging

- Utility provides:
  - new service panel
  - conduit and wiring
  - trenching
  - associated site work
- Utility owns and maintains "Make Ready"

- Utility provides choice for pre-qualified equipment;
  - Customer brings their own
  - Prepay for equipment
  - Pay in monthly charge
- Customers enrolled in available time-varying rate and encouraged to participate in smart charging programs, as they become available

Why focus on public fast charging?



Objective:
Increasing fast charging infrastructure to reduce “range anxiety”

Rationale:

- **Address range anxiety**
- **Support longer distance driving**
- **Provide a charging solution for those who can’t charge at home**
- **Make up for lack of infrastructure**
- **Standalone economics for fast charging have generally been insufficient to drive required investment**
- **Potential evolution in mobility services that will rely more on sharing**

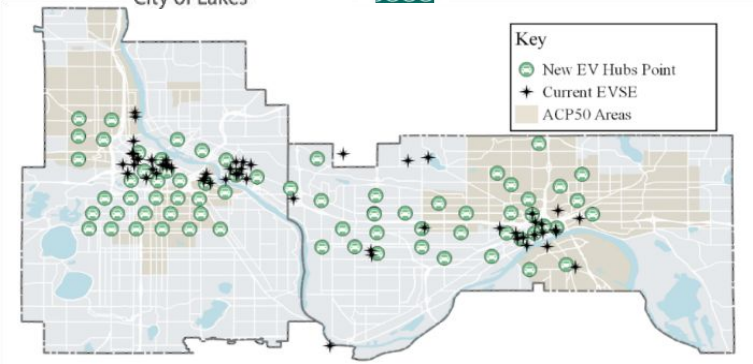
Community charging infrastructure partnership pilot

Community Fast Charging Infrastructure

HOURCAR

Minneapolis
City of Lakes

SAINT PAUL



We are partnering with communities, charging network providers, and shared mobility companies to help customers:

- Access new, low-cost mobility services
- Provide sufficient network coverage for shared mobility, while also enabling public charging
- Lower upfront costs for building out network by providing Make Ready services
- Locate vehicles and charging infrastructure in diverse communities

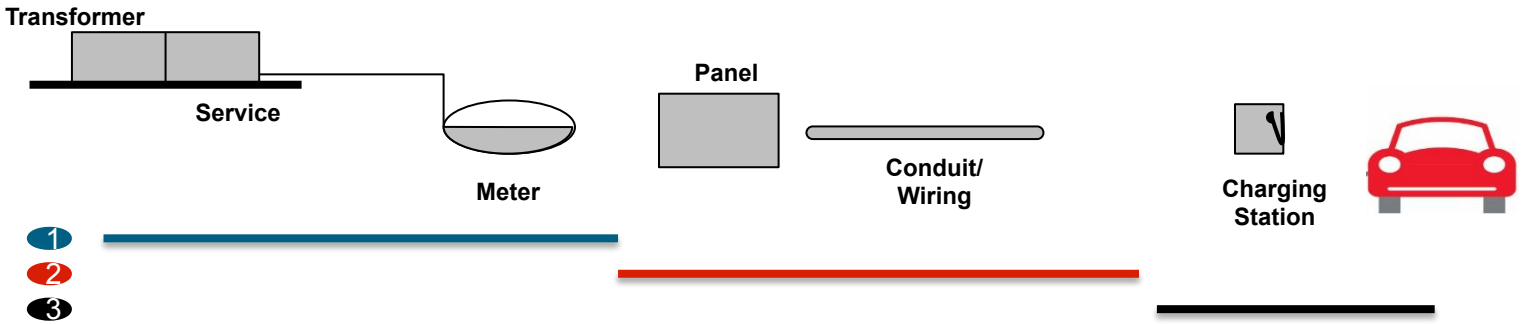
DC Fast-Charging Infrastructure Pilot

Make Ready infrastructure for fast charging

Our proposed objectives:

- Help lower the investment barriers to deployment
- Complement and accelerate investments
- Maintain customer choice
- Provide safe and reliable electric service

Public Charging Pilots



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  - new meter
- This new line of service will only serve EV charging

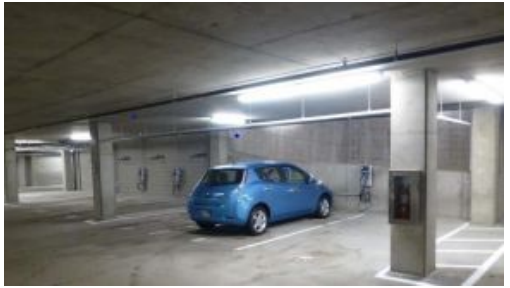
- Utility provides:
  - new service panel
  - conduit and wiring
  - trenching
  - associated site work
- Utility owns and maintains "Make Ready"

- Site Host chooses equipment
- Site Host owns and maintains equipment
- Site Host required to participate in time-varying rate
- Site Host or Developer determines pricing for EV drivers, but default is at least 2:1 energy rate differential between on and off-peak

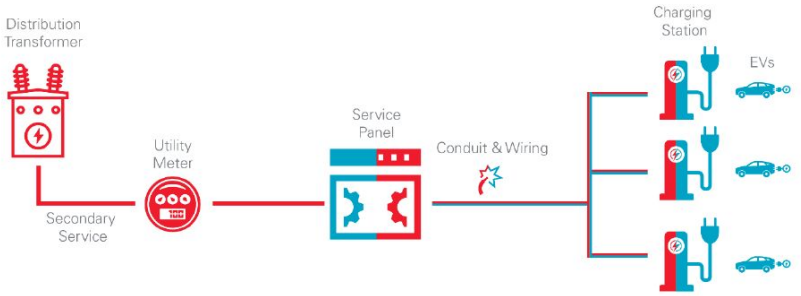
Multi-Dwelling Unit

Why focus on multi-dwelling unit (“MDU”) charging?

- Over 40% of Twin Cities housing stock is multi-dwelling unit buildings, and MDUs are common throughout Xcel Energy’s service territory
- Customers are looking for support to address a unique set of barriers
- Lack of existing charging infrastructure slows EV adoption, holding back potential benefits



Multi-Dwelling Unit Pilot Proposal



	EV Service Connections	EV Supply Infrastructure	Charging Equipment
Shared Parking - Site Host Provided Charger	Utility	Utility	Customer
Shared Parking - Full Service	Utility	Utility	Utility
Assigned Parking - Full Service	Utility	Utility	Utility

Minneapolis City of Lakes

HOURCAR

SAINT PAUL

AMERICAN LUNG ASSOCIATION.

Pilot Proposal:

Evaluate models for addressing upfront cost barriers and split incentives while increasing access to charging

Seeks to Support:

Shared Parking for multiple drivers sharing chargers and property management that wants flexibility

Assigned Parking for buildings where drivers have an assigned space and HOAs want to avoid ownership, maintenance, and billing associated with charging

Minnesota Relief and Recovery Proposal

Vehicle Rebates

- Rebates for new and used light-duty vehicles
- Rebates for buses, including transit and school

Public Charging

- Increase access to public charging in areas with unmet needs

Fleet Charging

- Expand eligibility in fleet pilot for non-profits and private customers

XE fleet electrification

- Accelerate adoption of EVs in Xcel Energy's fleet

Questions?

Minnesota Municipal Utilities Association

Expanding Charging for Minnesota Fleets, Workplaces, Multi-Unit Dwellings, and Public Locations

December 4, 2020

Bill Black

Government Relations Attorney

Minnesotans going electric

With help from their municipal utilities


My Account:
E-Mail
Password
Login
Can't access your account?
New User? Register to use SmartHub!
AUSTIN UTILITIES
Connections for Better Living®
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MY ACCOUNT
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Education & Environment
CCR Rule Compliance Data and Information
Electric Vehicle
Partners In Planting
Renewable Energy
Scholarship Opportunities
Water Quality
Austin Utilities is charged up about Electric Vehicles (EV) and want you to be too.
Electric Vehicle Information Brochure
WHAT IS AN EV?
EV stands for an Electric Vehicle, but there are few different types:
BEV Battery Electric Vehicle (all Electric)
PHEV+ Plug-in Hybrid Electric Vehicle (>10 kW)
PHEV Plug-in Hybrid Electric Vehicle (<10 kW)
EVCHOICE
CHARGING FORWARD WITH LOCAL ENERGY

Southern Minnesota Municipal Power Agency

1 DC fast-charger and 1 dual-port level-2 charger in each SMMPA community

- New Prague
- Lake City
- St. Peter
- Waseca
- Owatonna
- Rochester
- Fairmont
- Wells
- Austin
- Blooming Prairie
- Spring Valley
- Preston
- Redwood Falls
- Litchfield
- North Branch
- Princeton
- Mora
- Grand Marais

AUSTIN UTILITIES
Connections for Better Living®

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Austin, MN 55912
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talk2au@austinutilities.com

OWATONNA PUBLIC UTILITIES

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Owatonna, MN 55060
www.owatonnautilities.com
507.451.2480

rpu®
we pledge, we deliver

4000 E River Rd NE
Rochester, MN 55906
www.rpu.org
507.280.1500
rpumarketing@rpu.org

Triad

Triad

- Developed EV-CHOICE branding
- Produced educational EV 101 brochure
- Working on materials to educate customers with fleets.

AUSTIN UTILITIES
Connections for Better Living®

2020 Activities:

- Purchased the first all-electric AU fleet vehicle, a Nissan Leaf.
- Created an EV page on AU website
- Kicked off an EV Club. No members yet but sure to get some soon!
- Had an outside expert speak to key accounts about EVs.
- Installed 2 additional level-two dual charging stations on public property, including one in AU parking lot.
- Met with local dealers to discuss AU's plans and their plans for EVs. Availability is a big problem in our community.

AUSTIN UTILITIES
Connections for Better Living®

Plans for 2021:

- Install a DCFC charger. Had hoped to get it in this year but did not finalize a location.
- Offering an EV education program for high school aged students called rEV (pilot program).
- Hope to have a charger installer training session for local electricians who will be put on a list made available to EV purchasing customers (Xcel idea).
- Working to finalize EV rates and incentives.

2020 Activities:

- Created an EV webpage on RPU's website
- Created an EV owners club in September (20 members to date).
- RPU staff taught a community education class called Electric Vehicles--An Introduction to the Future of Transportation.
- Cohosted an EV informational event at Rochester Farmer's market with EVs
- Assisted in installation of 2 new level-two chargers in downtown ramps and at the development center.
- Assisted ZEF in securing a location and installing Rochester's first DC fast charger with a VW Settlement grant.
- Purchased an additional Mitsubishi Outlander PHEV

rpu®
we pledge, we deliver

Plans for 2021:

- Provide a second community education class
- Host two ride and drive events (if safe)
- Work on education for electrical contractors to be RPU recommended EV charger installers
- Dealership engagement

MISSOURI RIVER® ENERGY SERVICES

https://www.brightenergysolutions.com/

Bright Energy Solutions®

BENEFITS | EV FACTS | SAVINGS CALCULATOR | CO2 REDUCTION | EV MODELS | PHEV MODELS | INCENTIVES & PROMOS | CHARGER FINDER

Electric vehicles, a smart transportation choice.

Electric Vehicles (EV) Cost Less To Operate Than Gas Powered Cars.
EV operation can be three to five times cheaper than gasoline and diesel powered cars, depending on your local gasoline and electric rates.

EVs Are Environmentally Friendly.
EVs have no tailpipe emissions. The power plant producing your electricity may produce emissions, but electricity from hydro, solar, nuclear or wind-powered plants is generally emission-free.

Never Go To The Gas Station Again.
Electric vehicles do not require gasoline and can be charged at home with a standard 120V outlet or a 240V level 2 charger can be installed for faster, more efficient charging.

EV Performance Benefits.
Electric motors provide quiet, smooth operation, stronger acceleration and require less maintenance than gasoline-powered internal combustion engines.

EV Driving Range & Recharge Time.

- Also, incentive program for member utilities to install public DC fast chargers and level-two chargers.
- Coming soon . . .
  - Helping member utilities prepare to offer TOU rates to their customers
  - Offering a Member Technology Roadmap, to include:
    - Advanced Metering Infrastructure (AMI)
    - meter data management
    - customer portals
    - data analytics
    - customer information billing systems

MRES utility charging station partnerships

- Moorhead Public Services
  - Funded by MPS with DOE grant through ZEF. (M2M Corridor.)
- Wadena Electric & Water
  - One level-two charger downtown - thru MRES and Chargepoint - operational since October - used once in first month - one EV owner in town.
- Detroit Lakes Public Utilities
  - ZEF with VW Settlement funds; began operating in November.
- Marshall Municipal Utilities
  - City of Marshall provided municipal liquor store parking lot location and MMU installed utility infrastructure for ZEF to own and operate 1 DCFC with 2 level-two ports – currently averaging 3 vehicle charges per month.
- Alexandria Light & Power
  - Ride-and-drive event; One DCFC and 2 level-two chargers at Simonson Gas Station located at I-94 and Highway 29 - partnership between ALP Utilities, MRES, ZEF, Runestone Electric Assoc & Great River Energy. (M2M Corridor.) Usage each month.


Blue Earth
Ride & Drive
Thursday, June 6th
3:00 pm - 7:00 pm
BLUE EARTH AREA
CHAMBER OF COMMERCE
1134 GIANT DRIVE
BLUE EARTH, MN 56013
Ever wanted to get behind the wheel of an electric vehicle?
Join the city of Blue Earth for a Ride and Drive event at Blue Earth Area Chamber of Commerce
Test drive EVs
Guest Speakers
Free Food
Welcome to
Blue Earth
Register at BELW.org
CMPAS
CENTRAL MUNICIPAL POWER AGENCY/SERVICES
BlueEarth
Light & Water
ENERGY INSIGHT, INC.
FASTENAL
Drive Electric
MINNESOTA
irby
A Sonepar Company

BlueEarth
Light & Water

More public-powered charging stations

- Lanesboro Public Utilities
  - 2 level-two chargers in town, mostly for tourists (pictured)

More public-powered charging stations

- Elk River Municipal Utilities 1 DCFC at Coburns parking fuel station
  - 2 level-twos
    - City parking lot
    - Utility's parking lot for utility's and city's plug-in vehicles (pictured)

More public-powered charging stations

- Springfield Public Utilities
  - East End Park (pictured)
- Willmar Municipal Utilities
  - 1 DCFC installation through ZEF (coming soon)
- Phase II VW Settlement grant applications in the works

THANK YOU

Bill Black
bblack@mmua.org
(763) 746-0708

MMUA

To unify, support and serve as a common voice for municipal utilities.

EV Charging and What's Next

Supplier Perspective

SIEMENS

Context is everything

SIEMENS

What's needed?

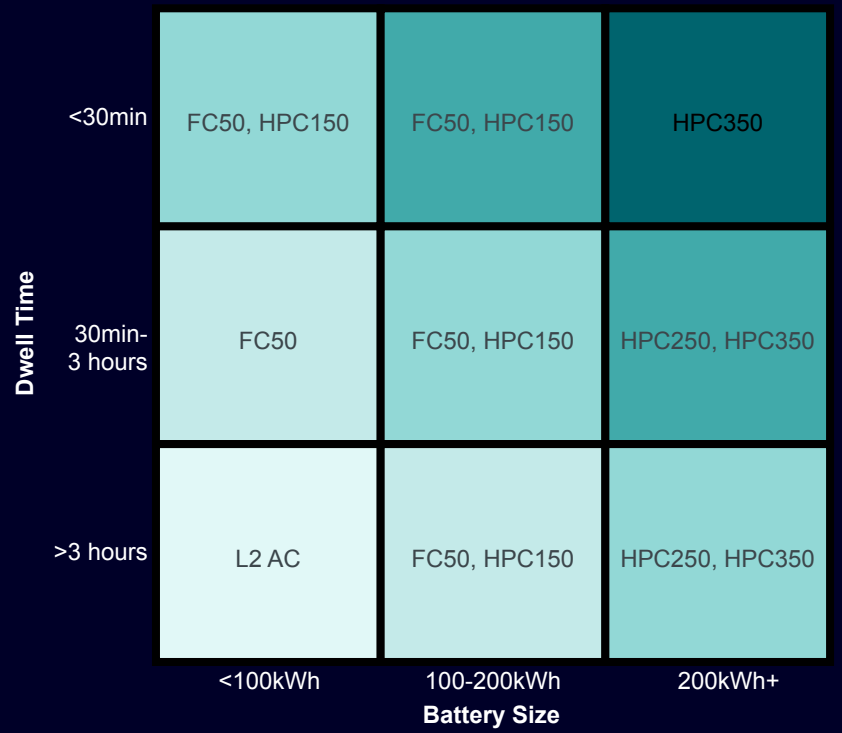
1. What am I trying to achieve?
2. What kind of charger do I need?
3. What functionality do I need at the site?
4. How do I get started?

1. What am I trying to achieve?

- Retain old business – minimize disruption
- Draw new business/lead in green – maximize exposure
- New revenue source – link to current business processes
- Replace revenue source – maximize direct ROI

To bill or not to bill, that is the question…

2. What kind of charger do I need?
Battery and Dwell Time



SIEMENS

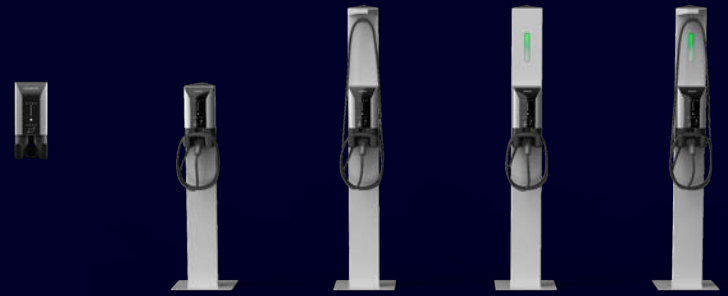
2. What kind of charger do I need?
AC versus DC

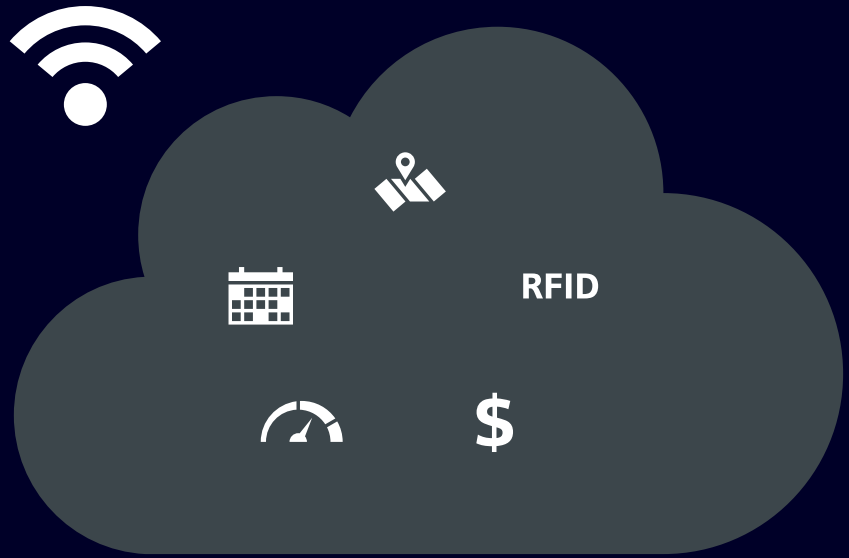
AC/DC

Slower: 5-20kW power – ~80% in 4-8 hours	✗	✓	Fast: 50-350kW power - ~80% in 10-30 min
CAPEX Flexible: ~$1-4K+ for charger alone	✓	✗	CAPEX Intensive: ~$25K+ for charger alone
Can often be added to existing service and controlled to stay within certain limits	✓	✗	Often requires new service and electrical “make ready” – time and money
Limited exposure to demand charge costs	✓	✗	“Demand charges”

SIEMENS

3. Site functionality
Hard and soft





DCFC fairly consistent; L2 is very flexible

SIEMENS

3. How to get started
Key Considerations

Know your application

1. Charger type
2. Quantity of chargers required and total load capacity of your building for EV charging purposes
    a. Please note you don't have to limit the total # of chargers to the total building capacity divided by kW supply of chargers. We can curtail chargers to give you a larger quantity coverage for your site.
3. Functionality: What would you like to be able to do with the chargers?
    a. Track usage?
    b. Bill users?
    c. Lock access?
    d. Curtail load?
    e. None of the above and just charge for whoever pulls up?
4. Communication: Access to a router to connect chargers or cellular connection required?
    a. Strongly recommend physical ethernet connection (port on chargers) to ensure continuous signal between chargers and cloud if you don't need cellular
5. Accessories: Will the chargers be wall mounted, or need to be on pedestals?
    a. One charger per pedestal or two?
    b. Cable management or wrap around?

Engage your Utility and your ECs early

OPEX/cost-of-energy analysis and how you'll avoid or handle it

Don't get trapped by the easy button

Check for rebates/grants

Public charging is a means to an end – always have the end front and center

SIEMENS

Contact

Published by Siemens eMobility

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Fleet and Utility Engagement
Siemens eMobility, North America

Phone (407) 619 9334

E-mail thulin.anders@siemens.com

SIEMENS

EV Charging in Condominiums and Apartment Buildings

Jukka Kukkonen
Chief EV Educator
Shift2Electric.com
jukka@Shift2Electric.com

Sponsored by Fresh Energy

Fresh Energy

Considerations:

- Power capacity
- Breaker panel capacity
- Conduit runs
- Charging stations
- Metering
- Billing and payments
- Pricing structure
- Maintenance
- Future proofing

Common Challenges:

- Stakeholders need a lot of education
- There isn't much extra power capacity available
  -> Expensive to add
- Conduit runs are not equal
- Metering and billing can be laborious
- How to include investment costs to pricing
- How do we provide future EV owners same deal as early adopters
- How to get Time of Use rate?

Power and Energy calculator

		Your numbers	Example
1	Vehicle make and model		Tesla Model 3 (SR+)
2	Charger size (in car, contact dealer for this info if needed)	kW	11.5 kW
3	Electricity consumption (www.fueleconomy.gov)	kWh/mile	0.24 kWh/mile
4	Driving range on electricity (www.fueleconomy.gov)	miles	250 miles
5	Average daily driving	miles	35 miles
6	Choose the smaller of 4 or 5	miles	35 miles
7	**Average daily energy consumption: (=Row 3 x Row 6).**	**kWh**	**35 x 0.24 = 8.4 kWh**
8	**Charging time using 6.6kW 240 V Level 2 station (=Row 7 / 6.6)**	**Hours**	**8.4 / 6.6 = 1.3 Hours**
9	**Charging time using 3.3kW 240 V Level 2 station if the power is shared between two cars(=Row 7 / 3.3)**	**Hours**	**8.4 / 3.3 = 2.6 Hours**
10	How long the car is parked during the night	Hours	11 Hours
11	**How much it costs if we assume $0.12/kWh (Row 7 x 0.12)**	**$**	**8.4 x 0.12 = $1.00**

Author Jukka Kukkonen, Shift2Electric. For more information visit www.MUDCharging.com .

Source:
MUDCharging.com

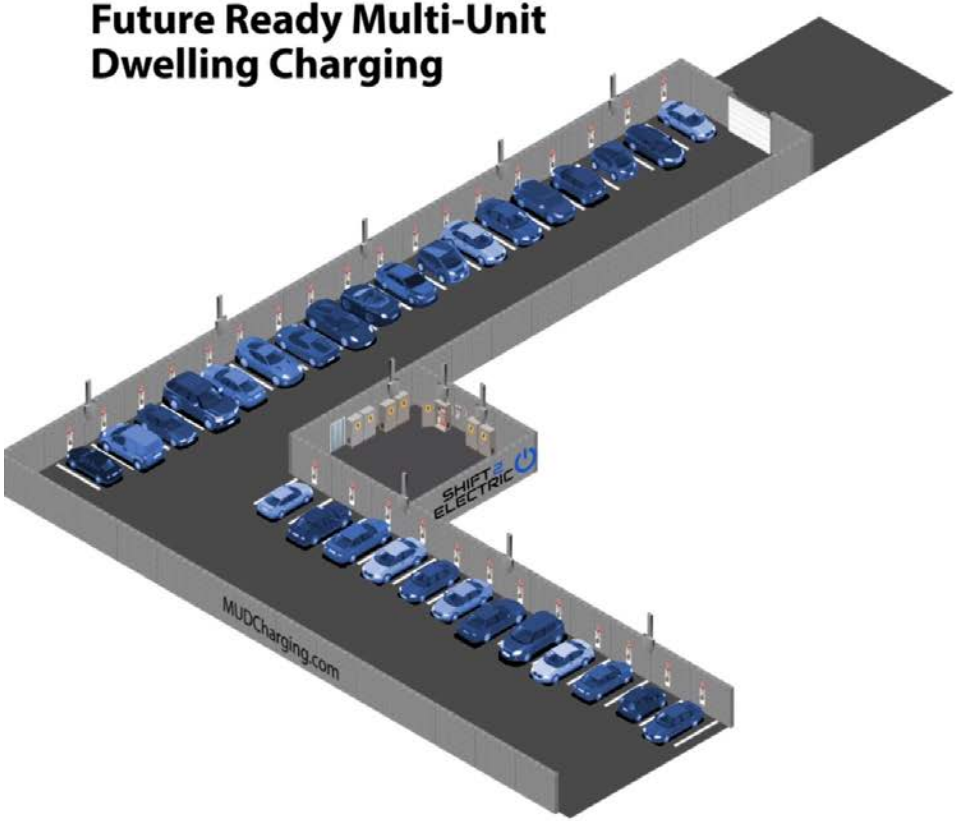
Metering and Payment Systems table

	Description	Who does billing	Compo-nents needed	Communi-cation connec-tions	Installation costs	Extra ongoing costs	Time of Day metering possible	Pros	Cons
1	Connected to homeowner's existing meter	Utility	Conduit and wiring	No	Low if conduit runs are not a problem	No	Yes, EVSE and unit are under same rate	Simple, no extra costs	Conduit runs can be extensive
2	Utility submetering (meter separate or inside the EVSE)	Utility	(Meter in a small box), conduit and wiring	Utility company covers	Low	Monthly service charge from utility	Yes	Relatively simple, utility handles metering and billing, can have separate EV rate	Some extra installation and ongoing costs
3	Submetering by building management	Building manager	Meterbox, meter, conduit and wiring	Depending on the type of meter used	Higher, extra cost from submeter	Potentially communication costs, billing labor	Yes	Accurate metering, monthly, quarterly or annual billing/adjustment	Building manager has to do the metering and billing
4	Flat billing with estimate	Building manager	Conduit and wiring	No	Low	No	No	Simple, cheap system	Inaccurate, no time of day option, does not take into account charging outside of home
5	Third party system and billing	Service provider	Conduit, wiring and advanced EVSE	Yes	Varies based on the service provider	Yes, often consisting of flat annual service fee + percentage of billing	Yes	Simple for building manager and user, provides more data, enables multiple users	Expensive, ongoing costs can in some cases be more than electricity costs

Author Jukka Kukkonen, Shift2Electric. For more information visit www.MUDCharging.com .

Source:
MUDCharging.com

Future Ready Multi-Unit Dwelling Charging



1 inch conduit to every 4th parking spot terminated to a junction box.

Breaker panel capacity to serve 208/240V 50A line to these spots.

Simple charging station installation for 25% of vehicles.

EVs 25-50%, Power shared between every two stations

EVs 50-75%, Power shared between every three stations

EVs 75-100%, Power shared between every four stations
Increase power capacity to each junction box to 208/240V 80A

Use charging stations with embedded metering and power sharing capability

For more info, visit **MUDCharging.com**

Utility companies can help:

- Advisory and education services
- EV rate (TOU)
- Metering and billing
- Charging infrastructure
- Make ready options

Photo:
Shift2Electric.com

MUDCharging.com Charging 101 EV Owner HOA Owners & Managers Utility Company Tools About

What Is Your Role?

EV Owner

Looking for charging

HOA

Planning for charging

Building owner/manager

How to provide Ev charging

Electric Utility

Support and programs

C Line ABRT Electric Bus Pilot
Metro Transit

Expanding Charging for Minnesota Fleets
December 4, 2020

METRO

Carrie Desmond, PE

- Principal Engineer
- BEB Charging Infrastructure PM
- New Bus Garage PM

METRO

C Line Opened June 8, 2019

- 8.5 miles from downtown Minneapolis to Brooklyn Center
- 23 stations
- $37 million project cost including new stations and BRT buses
- 7,600 daily rides today, 9,300 by 2030

8 New Flyer XE60 Battery Electric Buses

- First battery electric buses procured by Metro Transit
- First buses to be built start to finish in St Cloud, MN
- Delivered in early 2019
- 466 kWh battery
- Electric driven center and rear axles
- Diesel fired auxiliary heater to preserve range in cold weather

METRO

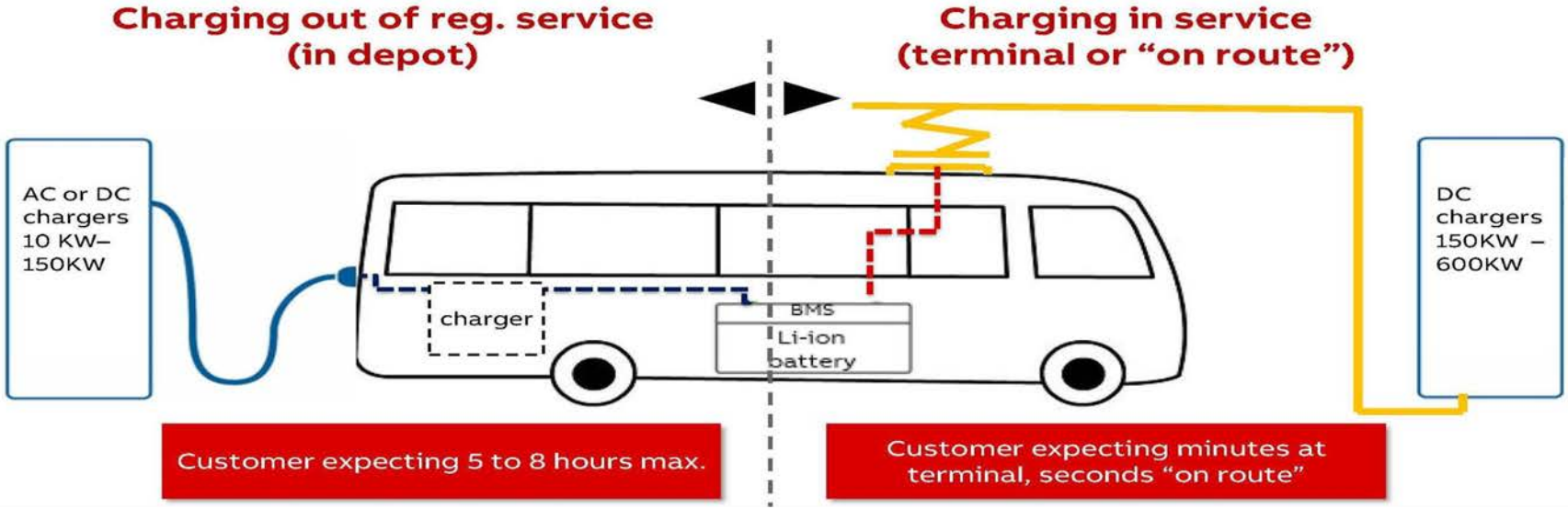
Bus Successes & Bus Challenges

- Smooth, quiet operation
- Positive feedback
- Enduring Minnesota weather extremes
- Meeting energy consumption expectations

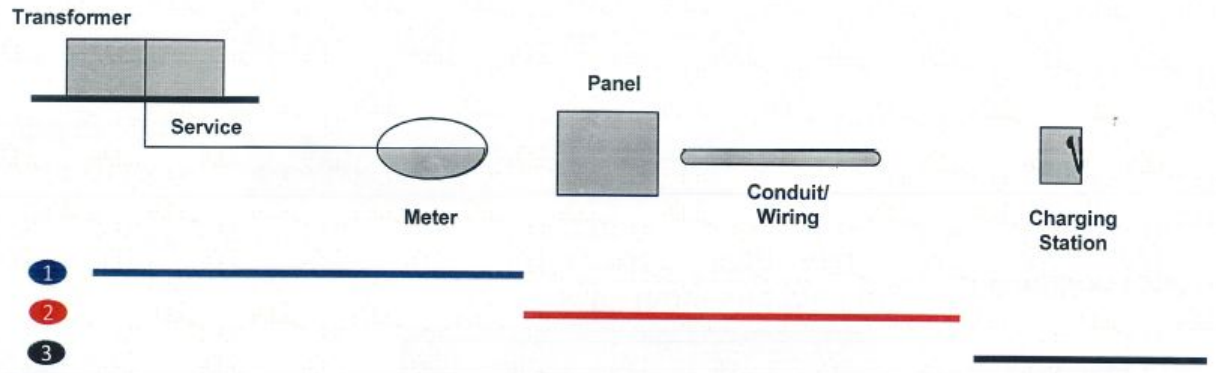
- System software updates
- Battery balancing
- Adjusting from mechanical maintenance to software/technology

Charging Strategy

Combination in-depot and on route for range extension



Make Ready Infrastructure



- 1 Xcel typically ends at the Transformer/Meter
- 2 Pilot Project will cover Panel, conduit, and wiring into to base of chargers
- 3 Metro Transit install charging stations

Depot Chargers at Heywood Garage

On Route Chargers at Brooklyn Center Transit Center

METRO

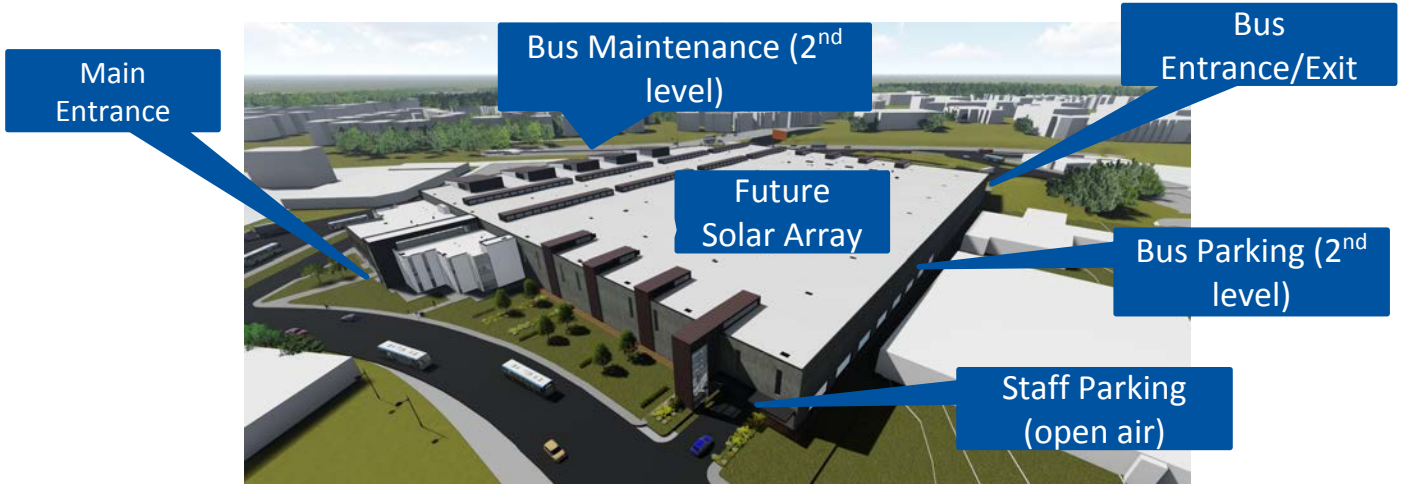
Charger Successes & Charger Challenges

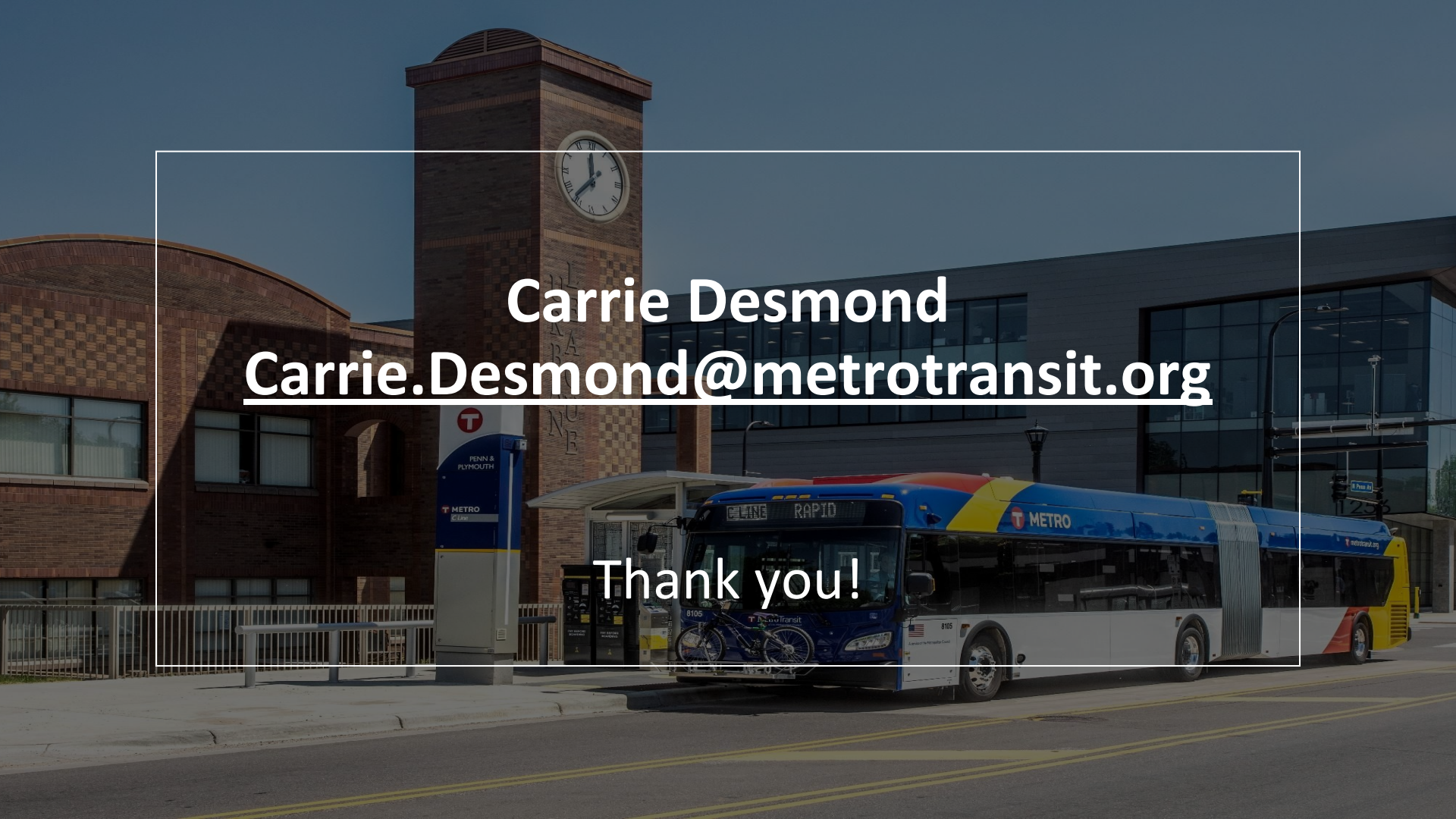
- Combination strategy effective
- Owner & vendor collaboration
- Strong utility partnership
- Hands on approach

- Technology readiness
- Equipment reliability
- Industry maturity
- Rapid growth in industry

Where do we go from here?

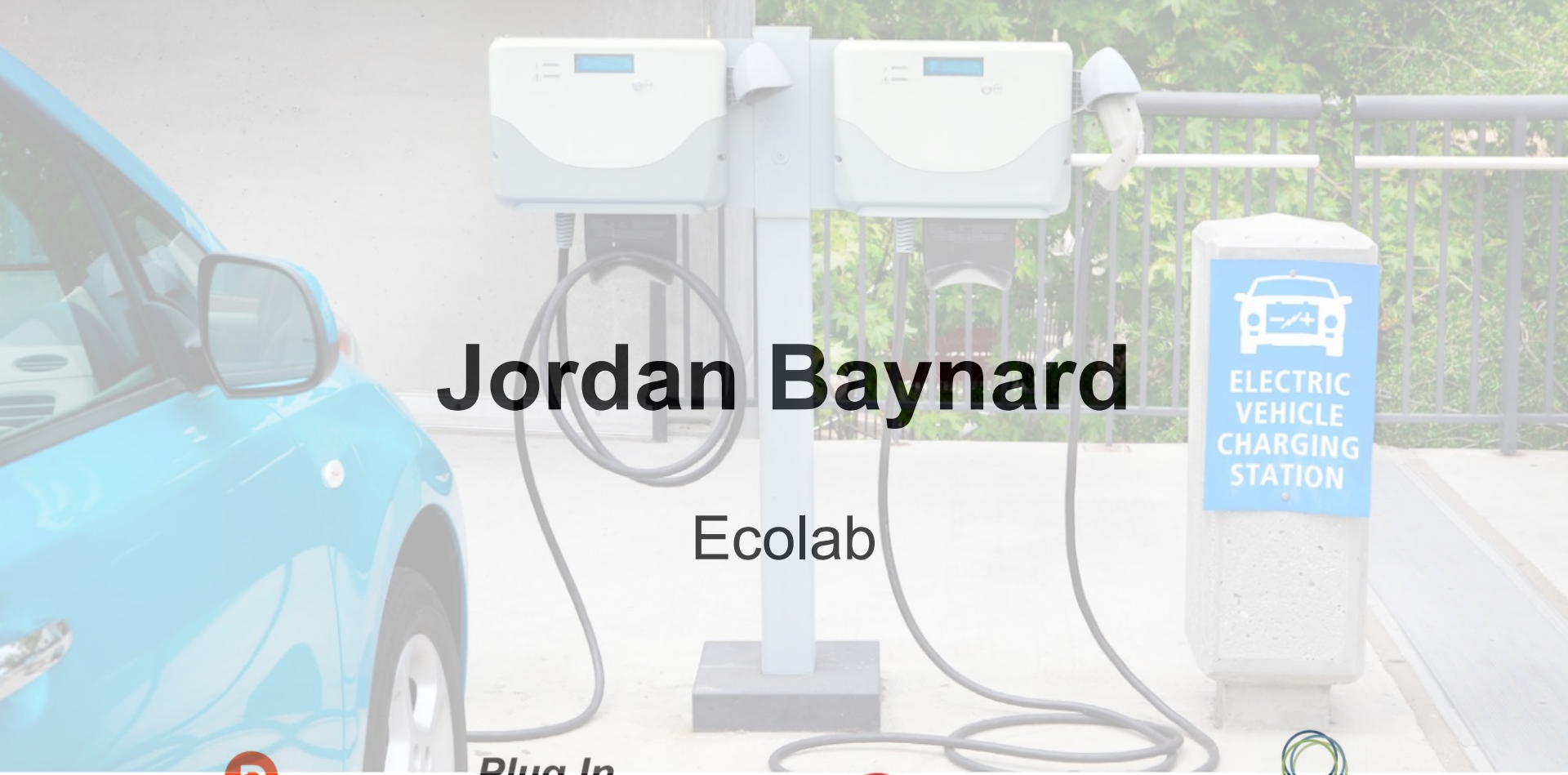
- Master Planning
- New Minneapolis Bus Garage – Phased Electrification
- New Minneapolis Bus Garage – Solar and Battery Storage
- Future of Green Energy Partnership with Xcel Energy





Carrie Desmond
Carrie.Desmond@metrotransit.org

Thank you!



Jordan Baynard

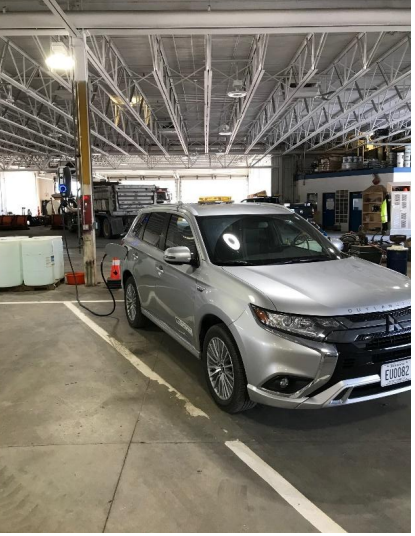
Ecolab

Drive Electric MINNESOTA

Plug In America

Xcel Energy

SUSTAINABLE GROWTH COALITION




Electrifying the State Fleet: Progress, Plans & Lessons Learned

Siri Simons, Principal Sustainability Planner, Minnesota Department of Transportation

Marcus Grubbs, Enterprise Sustainability Planner, Minnesota Department of Administration

DEPARTMENT OF TRANSPORTATION

mndot.gov

Executive Order 19-27: Sustainability Goals

Fleet: 30% reduction of fossil fuel use by vehicles and equipment by 2027.

Energy: 30% Reduction in consumption of energy per square foot by 2027.

Water: 15% reduction in water use by 2025.

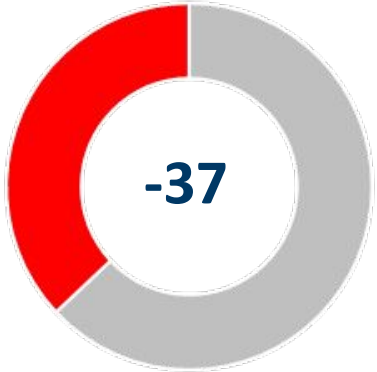
Solid Waste: 75% of solid waste is recycled or composted by 2030.

Procurement: 25% of total spending on priority contract is sustainably purchased by 2025.

Greenhouse Gas: 30% reduction of greenhouse gas emissions by 2025.

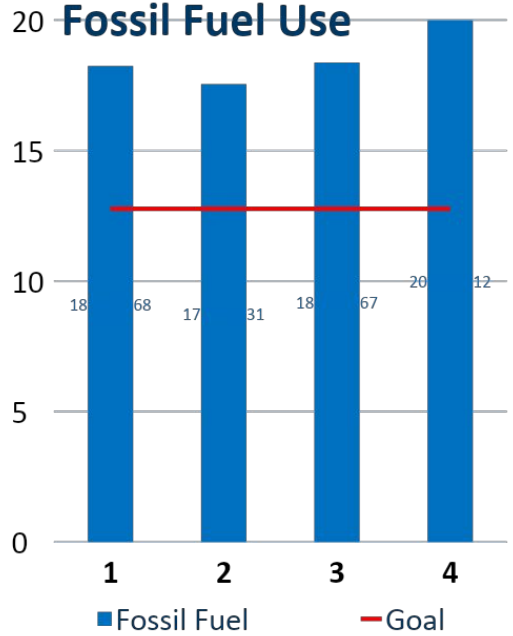
2019 Fleet Progress Toward Goal

Progress Toward Goal

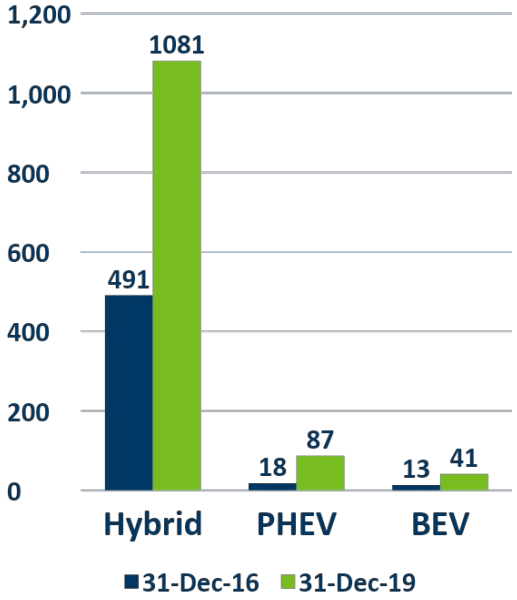


Fleet:
30% reduction of fossil fuel use by the vehicles and equipment by 2027.

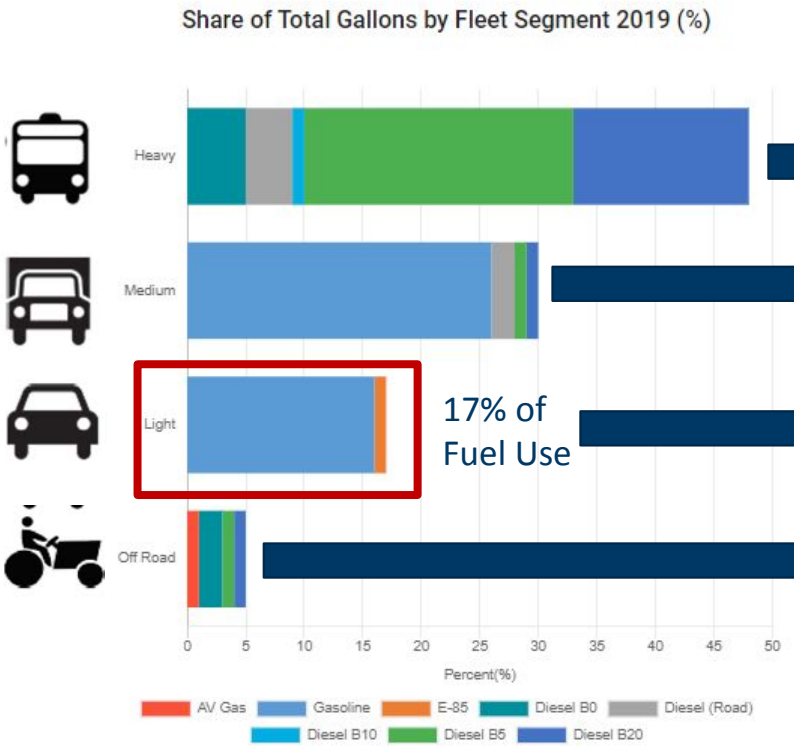
Fossil Fuel Use



Electrification of the Light Fleet



Fleet Fuel Use by Segment



17% of Fuel Use

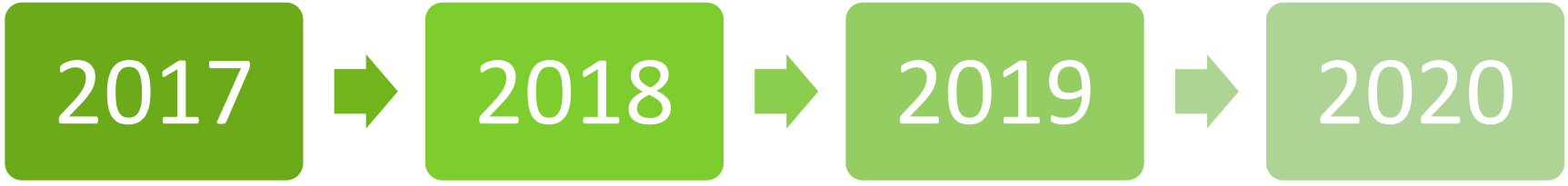
Electrification, Bio, RD100, H_2

Electrification, Bio, RD100, H_2

Electrification

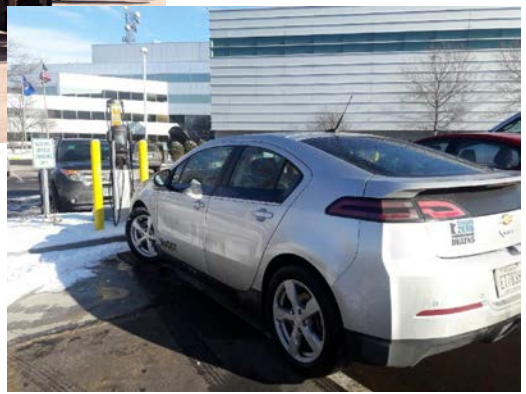
Electrification

MnDOT Sustainability Journey



MnDOT Fleet Overview

- ~1,250 light-duty vehicles
  - 885 pick-up trucks
  - 181 SUVs and mini-vans
  - 181 sedans
- 2,700 heavy-duty vehicles



Leadership Support for Fleet Sustainability Goals

- Executive Order 19-27
  - Reduce agency greenhouse gas emissions by 30% from 2005 levels by 2027
  - Reduce fleet fossil fuel use by 30% from 2017 levels by 2027
- Sustainable Transportation Steering Committee
  - Established in 2016 to develop sustainability metrics and a reporting framework
  - Applied Next Generation Energy Act goal to MnDOT fleet
- Leadership priority

Strategic Planning

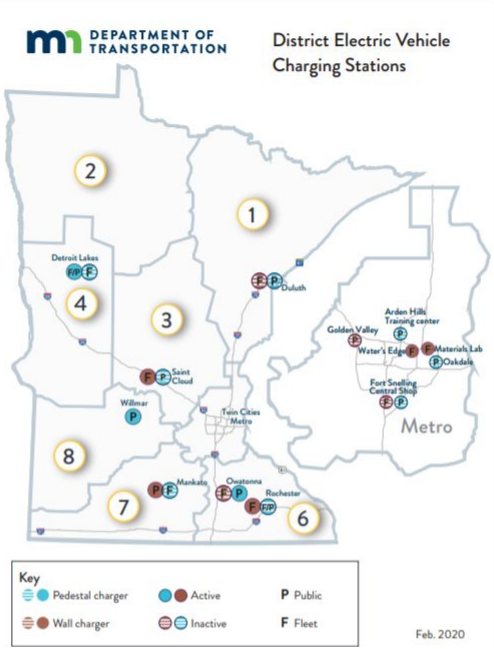
- Annual Sustainability Report
- 2018 – Developed fossil fuel reduction strategies, including:
  - Expand use of alternative fuels
  - Direct motor pool use towards fuel efficient vehicles
  - Promote electric vehicle use
- 2019 – Developed fleet action plan
- 2020 – Tracked progress on action plan

Establishing New Processes

- The **Light Duty Fleet Decision Making Tool** assists MnDOT fleet managers with selecting the most fuel efficient vehicle when ordering new light duty fleet vehicles
- This interactive tool includes three sections focused on the following objectives:
  - Identify the primary use for the vehicle under consideration
  - Identify the appropriate level of electrification based on the charging resources available at the facility where the vehicle is stored
  - Identify the vehicle model to request
- Includes purchase price for each vehicle on state contract and total cost of ownership information based on MnDOT assumptions (i.e. lifecycle)
- Staff must submit justification for purchasing an ICE sedan, SUV, or mini-van

Initial Investment in EVs and Chargers

- Purchased 24 BEVs/PHEVs for MnDOT facilities throughout the state
- Installed 40 Level II chargers at MnDOT facilities
  - Used in-house electricians to achieve cost savings on the installation
  - Some chargers are for MnDOT fleet only, while others are available to the public
  - No cost for public-facing chargers



What we're focusing on in 2021

- Working with other state agencies to develop ADA guidance for EVSE designs at state facilities
- Partnering with Xcel Energy to identify opportunities to further electrify fleet
- Participating in Xcel Energy Make Ready Program to install EVSE at MnDOT facilities
- Continuing to explore options to reduce greenhouse gas emissions throughout MnDOT fleet through other strategies like idle reduction and biofuels for medium and heavy duty vehicles

Xcel Make Ready Fleet Charging Pilot

- Status Update
  - Customer service agreement finalized – going to the PUC for approval
  - Preliminary site plans for 4 sites with 46 ports
- Next Steps
  - PUC approval of Customer Service Agreement
  - Equipment Selection and Ground Breaking
  - Looking for next round of sites

https://www.xcelenergy.com/staticfiles/xe-responsive/Programs%20and%20Rebates/Business/EV_Fleet_Information_Sheet.pdf

ADA and Electric Vehicle Charging

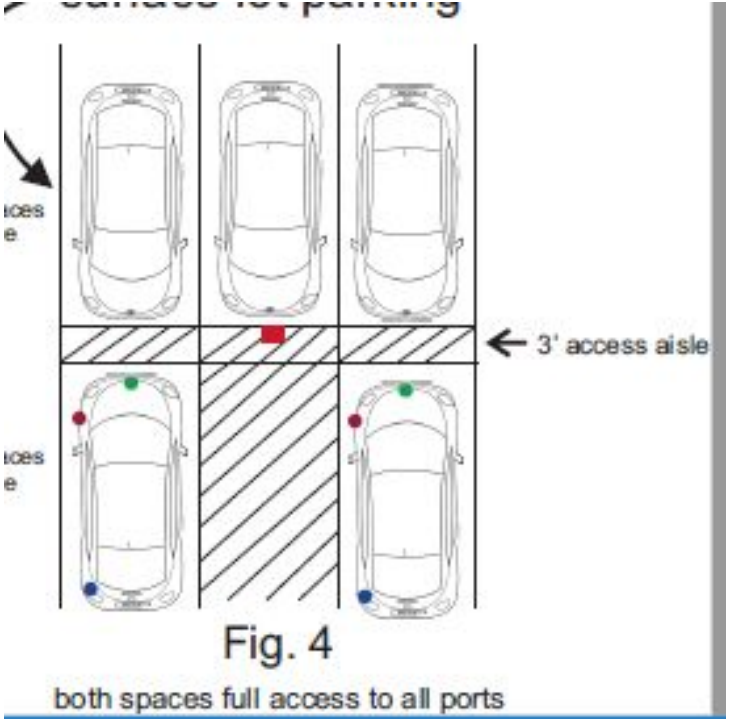
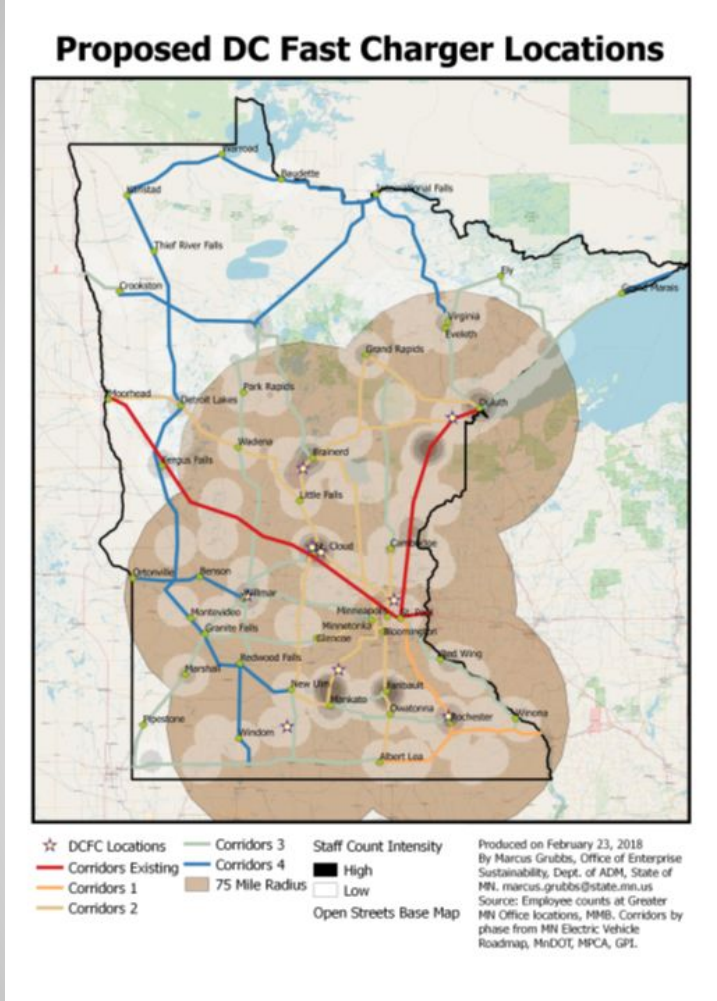


Fig. 4

both spaces full access to all ports

- MPCA, Mn Council on Disabilities, MnDOT, and Admin working together
- Discussing ADA requirements for EV parking as it relates to state agencies
- Based on other states (California) and US Dept. of Energy Guidance
- Public charging – Should adhere to same ADA principles.
- Fleet charging – More flexibility if non-EV vehicles are always available for those needing them.

For more info Contact Rebecca.place@state.mn.us



Appropriation bonds for EVSE

- Purpose: to enable electrification of state fleet.
- $2 million
- Tentatively 13 DCFC hubs along transportation corridors at state agency locations; available to fleet and public
- Tentatively 100 Level II EVSE ports at state agency locations

Closing Reminders:

Recordings available here:
https://pluginamerica.org/policy/webinar-series-minnesotans-going-electric/

- Plug In America
  - www.pluginamerica.org
  - Dean Taylor, Senior Policy Advisor: dtaylor@pluginamerica.org
- Drive Electric Minnesota
  - www.driveelectricmn.org
  - info@driveelectricmn.org
- Xcel Energy
  - www.xcelenergy.com
- Sustainable Growth Coalition
  - https://environmental-initiative.org/work/sustainable-growth-coalition/
  - Amy Fredregill, Managing Director: afredregill@en-in.org

Drive Electric MINNESOTA

Plug In America

Xcel Energy

SUSTAINABLE GROWTH COALITION