1. Welcome and Introductions
Joss Besse called the meeting to order at 2:36 p.m. Regina Mahony welcomed Taylor Newton. Taylor will be starting at CCRPC next week.

2. Approval of December 11, 2019 Minutes
Darren Schibler made a motion, seconded by Paul Conner, to approve the December 11, 2019 minutes. No further discussion. MOTION PASSED. Ravi Venkataraman abstained.

3. Act 250 comments
Charlie Baker explained that CCRPC’s ad hoc Act 250 Committee met to review the VNRC-Administration joint Act 250 proposed bill and have prepared draft comments. Then the House Natural Resources Committee generated a new draft bill 19-0040 dated 2/4. In response, Charlie Baker edited the draft comments and presented them as draft to the House Natural Resources Committee on Feb. 5th. The PAC reviewed the draft comments and responded to specific questions from Charlie Baker.

The PAC had the following comments/questions:

- Charlie Baker asked if the emphasis on use of maps for jurisdiction is a comment the PAC agrees with. There was some discussion about using maps for jurisdiction. Charlie indicated that in other places he’s worked maps were used in this way, and they don’t need to be exact they just need to be a helpful understanding of where jurisdiction applies and where it doesn’t. There was a comment that it doesn’t have to be all or none, for example, Comment 6 – 2,000’ within an interchange - is a measurable thing that can be mapped.

- Eric Vorwald stated that overall, jurisdictional relief is the most important amendment in the bill; if it isn’t included in future bills then that is a real problem. Paul Conner added that he doesn’t think New Town Centers need to be added to the jurisdictional relief because they are intended to have the NDA on top and would thereby become exempt. However multiple municipalities expressed the need for more than one state designation per municipality. There are growth areas that don’t qualify because you can’t have more than one designation: Shelburne Road in So. Burlington; New North End in Burlington; Essex Town Center if the Town and Village merges. Meagan Tuttle added that the comments from last year regarding the regional areas planned for growth versus the miniscule land area this bill proposes to exempt should be included in this year’s comments.
• David White suggested that the framework and standards for exempting Act 250 from the interchange areas would be a great framework for municipal delegation of Act 250 review. Why not use this for delegation of full authority for a municipality?
• There was a discussion regarding the inequity between a 10 acre commercial site (this very large) threshold, and the 10 dwelling unit threshold that could be on a ½ acre.
• Feedback on the proposed road rule is that it is too blunt of a tool to address habitat fragmentation.
• Feedback on the shift from District Commissions to an alternative board is that it’s confusing in the new draft of the bill. This may create more problems than it is solving. The PAC indicated that jurisdiction should be made at a staff level; there is no reason that the District Commissions need to make that decision. Instead there should be more support for the District Coordinators to address the inconsistency challenges in the various regions. Also, if jurisdiction is so confusing, then jurisdiction should be simplified (i.e. maps).
• The current bill does a good job of requiring updating of the maps; however the connection to the Capability and Development Plan is lost in this version of the bill. Standards and maps support a plan. While the mapping on its own will be helpful, there should still be a study to update the Capability and Development Plan. The Plan would provide us with a much more comprehensive process. Planning is more than a series of maps and broad policy statements. There is a balancing and prioritization that happens in the process. There has been a lot of local/regional mapping and planning done, perhaps this can be rolled up.
• Definition of forest blocks is way too broad.
• Regarding extinguishing existing Act 250 permits in the exempt designations and transferring the conditions to the local approval (comment #21), this could be a challenge in Winooski as a majority of the development is approved administratively and doesn’t follow the same process (no AMP, no facts and findings). There was also a question about what if the District Commission (or whoever this evolves to) doesn’t like the municipal decision; can they appeal it? There was a discussion that perhaps the District Coordinators should have the role of extinguishing permits along with the conditions.
• Regarding comment #22 – high priority river corridors – the note in the comment about downtowns and villages is very important.

Regarding next steps: it appears that the House Natural Resources Committee is trying to vote this bill out tomorrow. These comments will likely be used for other committees as the bill evolves. There are also housing provisions in the proposed bill that encourage private and non-profit housing developers to coordinate on affordable housing. CCRPC’s comments are currently silent on that. Meagan Tuttle stated that while the Priority Housing Projects encouraged people to work together, removal of a barrier to housing production (i.e. Act 250) is overall more helpful to the production of housing. There is a concern that the private developers are losing the pressure to add affordable to their projects. There was a suggestion to instead add housing tool components to the designations to solve this.

4. Electric Vehicle Charging Permit Process Review
Melanie Needle provided an introduction. Dave Roberts provided a presentation on Drive Electric Vermont, and a review of municipal bylaws to see how electric vehicle charging is permitted. The presentation is attached. A few key points from the presentation include:
• 80% of new cars in Vermont are cross-overs, AWD, trucks, etc and Dave Roberts expects that more EVs will be coming out in this category.
• The state needs to double EV registrations in order to hit the 2025 goals.
• It’s important that people have the ability to charge at home at night – the most efficient time to charge.
• Public charging is necessary but most EV drivers are not using them every day.
• Drive Electric Vermont has a charging installation guide: the chargers should be as close to the electric panel as possible; a wall unit is cheaper than a standalone bollard. Multi-unit dwellings can be tricky for home charging. BED and GMP are currently piloting chargers for multi-unit buildings so they might be able to help with the cost of installation.
• VT Building Energy Stretch Code – commercial: about 2% of parking EV ready; residential: 10+ units need 4% of parking. Also the new stretch code requires single family homes require level 1 charging (just means a regular plug within 5’ of the parking). Discussion about how these percentages are quite low if we are supposed to meet the state’s energy goals. Dave Roberts explained that municipalities can go beyond these base standards. Dave Roberts briefly reviewed a variety of local bylaw provisions that can be done. South
Burlington requires the stretch energy code throughout the City; Williston incentivizes electric vehicle charging through its growth management plan and other provisions. Dave Roberts and Melanie Needle will be reviewing local bylaws in Burlington, Colchester, Shelburne, Winooski, Essex Junction, and Richmond. If any other municipalities are interested, they should contact Melanie.

5. **Shared Parking Model**
Bryan Davis provided an introduction to the project. Matt Boulanger explained that they have some good parking parameters already, including 25% reduction for shared parking and transit access, etc. The impetus for this project was that the landowner of Maple Tree Place wanted to add more parking because Maple Tree place as it exists today has 200 less parking spaces than it should in strict adherence to the regulations. However, on the ground there are plenty of parking spaces. There are large parking lots that sit empty because they aren’t accessible.

David Grover, RSG, played a video showing the parking demand at various times of the week and year. Then explained the inputs and outputs associated with the shared parking tool. The tool identifies a prioritization of parking lots that a user would choose depending on the business location. These are self-defined. The output is availability (shows how many spaces are left) but could be about demand. There was discussion about how large of an area this could be used for, and use of it in a development review application. The tool can also be used by a parking manager because you can see the highly used areas and maybe time limiting those areas would make sense. The presentation is attached.

6. **Bolton Energy Plan**
This is a plan amendment to include a new enhanced energy plan, and the town is seeking a Determination of Energy Compliance. Paul Conner opened the public hearing. No public provided any comments. Paul Conner closed the public hearing.

Melanie Needle provided an overview of the Bolton Energy plan. This is an amendment so the expiration date will remain the same (2025). The Plan has met the requirements and Melanie found it to be a good Plan. Melanie added that Bolton has been doing great energy work including an energy forum. Melanie explained that Staff had provided comments for the Planning Commission public hearing and those have been made.

Larry Lewack stated that he appreciated the Staff comments and was able to incorporate those in the Plan.

PAC comments/questions:
- There was a question about the amount of energy generation on the orange polygons (pg. 168 in the PAC packet) to the west of Notch Road. It doesn’t seem that this area really could be used for solar. The base solar area already pulls out the constraints. There was discussion that this is not the map used to determine where exactly solar can and can’t go; the constraints are the land use policies that are used in the PUC process. This map is really a modeling tool to help generally understand if the targets can be met or not.
- The plan does not include specific preferred sites.
- Pg. 13 biomass heating – might be good to include a concept about carbon sequestration as an additional benefit for Bolton’s heavily forested landscape.
- Pg. 4 – great graphic about different dwelling unit types. Next time consider using the same colors from one type to another.
- Pg. 14 – very readable image regarding how the energy generation targets could be met.

Eric Vorwald made a motion, seconded by Ravi Venkataraman, that the PAC finds that the proposed Town of Bolton Town Plan Energy Elements (draft 1/29/2020) meet the requirements of the enhanced energy planning standards (“determination”) set forth in 24 V.S.A. §4352.

Upon notification that the municipality has adopted the amendments, CCRPC staff will review the plan, and any information relevant to the confirmation process. If staff determines that that substantive changes have been made,
the materials will be forwarded to the PAC for review. Otherwise the PAC recommends that the draft Energy Plan, 
should be forwarded to the CCRPC Board for an affirmative determination of energy compliance.
Larry Lewack and Joss Besse abstained.

7. Regional Act 250/Section 248 Projects on the Horizon
Hinesburg: nothing to be discussed now.
Underhill: amending Act 250 permit for dwelling.
Winooski: amendment for a sign in downtown.
Williston: 141 units on old Catamount golf course at corner of Mtn. View and CIRC ROW. Finney Crossing 
restaurant.
Jericho: nothing
Richmond: 5 lot commercial subdivision, but might trigger with
Bolton: nothing
Essex: nothing new. Allen Martin Drive approved awhile ago. Leo Industrial Park – ag soil mitigation is a lot.
So. Burlington: Fayette Drive new Larkin building – master plan for the whole area. 4 to 5 additional 3 story 
buildings (movie theater). Subdivisions in JAM golf course coming forward. Airport got approval for a 4 story hotel 
on the south side of the garage. Rejected by FAA because in radar cone. So starting again on the other side of the 
building.
Burlington: City Place 2.0 will now have to go to Act 250 because it no longer meets the residential threshold.

8. Other Business - none
a. Annual housing, commercial & industrial, and walking/biking infrastructure data development request was 
sent to you on Jan. 16th. Please submit this data as soon as possible if you haven’t done so already.
b. CENSUS - PSAP Update. Melanie explained that about a year ago we altered the blocks and tracts, and those 
have been approved by the CENSUS, however the Census Designated Places are accepted with the exception 
of Colchester and Williston – they just need to be re-submitted. The deadline is April 15th. Go to 
https://tigerweb.geo.census.gov/tigerweb/ if you’d like to see these boundaries.
c. The next PAC meeting will either be on March 11th or April 8th.

9. Adjourn
Larry Lewack made a motion, seconded by Andrew Strniste, to adjourn at 4:42p.m. MOTION PASSED
Respectfully submitted, Regina Mahony
Overview

1. Plug-in Electric Vehicle Overview
2. EV Incentives
3. EV Charging
4. State Building Energy Code Requirements
5. Planning & Permitting Recommendations
6. Discussion
Vermont Greenhouse Gas Emissions

Vehicle Efficiency

Electric cars are 2-3 times more efficient than gasoline
Types of Plug-in Vehicles

All Electric
- Battery
- Electric Motor
- 70 – 300+ Mile Range on Battery

Plug-in Hybrid
- Gasoline Tank
- Combustion Engine
- Battery
- Electric Motor
- 15 – 80 Mile Range on Battery
- + 300 or More Miles on Gasoline

Popular Models
Other Electric Options

Buses

Lawncare equipment

Bicycles

CarShare

Motorcycles

Monthly Cost Comparison

$2,400 Savings over 5 years

Source: US Energy Information Administration and VEIC
Assumptions: 25 mpg gasoline vehicle; 3 mile per kWh EV; 1,000 miles per month

https://www.driveelectricvt.com/why-go-electric/cost-of-ownership

US EIA / VEIC
Vermont EV Registrations

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Oct</td>
<td>120</td>
<td>432</td>
<td>801</td>
<td>1,046</td>
<td>1,396</td>
<td>2,114</td>
<td>2,788</td>
<td>3,541</td>
</tr>
</tbody>
</table>

Purchase Incentives

Federal Tax Credit
- Up to $7,500, based on battery size
- Begins to sunset when manufacturer reaches 200,000 EV sales
- Claim on income taxes (unless leasing)
- Does not carry-over into future years

State of Vermont
- For new EVs with starting MSRP under $40,000
- Households below about $96,000 annual income
- $1.1 million in funding, currently about $900,000 remaining

http://www.driveelectricvt.com/buying-guide/purchase-incentives
State EV Incentive

<table>
<thead>
<tr>
<th>Vehicle Type</th>
<th>State of Vermont Incentive For $96,122 Household Income or Less</th>
<th>Larger State of Vermont Incentive for Lower Income Households</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plug-in Hybrid Electric Vehicle</td>
<td>$1,500</td>
<td>$4,000</td>
</tr>
<tr>
<td>All-Electric Vehicle</td>
<td>$2,500</td>
<td>$5,000</td>
</tr>
</tbody>
</table>

Electric Utility Incentives

- $1,200 on new all-electric or PHEV; $800 for a used EV
  + Up to $600 for low and moderate income households
  + $400 rebate toward qualifying level 2 charger

- $1,500 on new all-electric; $1,000 for PHEV; $750 for a used EV
  + Up to $1,000 for low and moderate income AEV
  + Free home charging equipment

- $500 on new or used all-electric
  $250 on new or used plug-in hybrid
  + Nissan LEAF discount program

See our website for other utilities
## Combined Incentive Example

<table>
<thead>
<tr>
<th>Description</th>
<th>Nissan LEAF 150 Mile Range</th>
<th>Nissan Sentra</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starting Price</td>
<td>$29,990</td>
<td>$17,890</td>
</tr>
<tr>
<td>Federal Tax Credit</td>
<td>-$7,500</td>
<td>--</td>
</tr>
<tr>
<td>State of Vermont Incentive</td>
<td>-$2,500</td>
<td>--</td>
</tr>
<tr>
<td>Nissan Discount</td>
<td>-$5,000</td>
<td>--</td>
</tr>
<tr>
<td>Utility Incentive</td>
<td>-$1,500</td>
<td>--</td>
</tr>
<tr>
<td>Price after Incentives</td>
<td><strong>$13,490</strong></td>
<td>$17,890</td>
</tr>
</tbody>
</table>

### EV Charging

- **Home Charging**
- **Workplace Charging**
- **Public Charging**

- *Away From Home Charging*
# Charging Equipment

**Level 1 Charging**
- 120V
- 5 miles range / hr

**Level 2 Charging**
- 240V
- 10-20 miles / hr

**DC Fast Charging**
- 480V
- 70+ miles / hr

---

## EV Charging Summary

<table>
<thead>
<tr>
<th></th>
<th>Level 1</th>
<th>Level 2</th>
<th>DC Fast Charging</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Voltage</strong></td>
<td>120 V</td>
<td>208 / 240 V</td>
<td>208 / 480 V</td>
</tr>
<tr>
<td><strong>Amperage</strong></td>
<td>15 A</td>
<td>15 – 40 A</td>
<td>50 – 200+ A</td>
</tr>
<tr>
<td><strong>Power</strong></td>
<td>1.4 kW</td>
<td>3 – 7 kW</td>
<td>20 – 350 kW</td>
</tr>
<tr>
<td><strong>Typical Duration of</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Charge Event</td>
<td>6-10 hours</td>
<td>1-4 hours</td>
<td>30-60 minutes</td>
</tr>
<tr>
<td><strong>Range per hour of</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>charging</td>
<td>5 miles</td>
<td>10-20 miles</td>
<td>75+ miles</td>
</tr>
<tr>
<td><strong>Equipment Cost</strong></td>
<td>$30 – 900</td>
<td>$500 – 9,000</td>
<td>$15,000 – 40,000+</td>
</tr>
<tr>
<td><strong>Installation Cost</strong></td>
<td>$200 – 1,000+</td>
<td>$1,000 – 10,000+</td>
<td>$10,000 – 30,000+</td>
</tr>
<tr>
<td><strong>Plug Connector</strong></td>
<td>SAE J1772 / Tesla</td>
<td>SAE J1772 / Tesla</td>
<td>SAE CCS / CHAdeMO / Tesla</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Typical Uses</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Standard outlet for home use</td>
</tr>
<tr>
<td>▪ Employee parking during the work day</td>
</tr>
<tr>
<td>▪ Long term (8+ hours) parking at a commuter/airport lot</td>
</tr>
<tr>
<td>▪ Home use for faster charging</td>
</tr>
<tr>
<td>▪ Charging in a commercial area while shopping or doing business</td>
</tr>
<tr>
<td>▪ Workplace charging</td>
</tr>
<tr>
<td>▪ Fast charging while on a long trip in order to reach a destination or extend the length of a trip</td>
</tr>
<tr>
<td>▪ EV owners without access to home charging</td>
</tr>
</tbody>
</table>
EV Public Charging Availability

PlugShare.com

EV Charging - How

Considerations
• Power
• Futureproofing
• ADA access
• Walkways
• Cell service
• Snow removal

https://www.driveelectricvt.com/charging-stations/installation-guide
EV Charging – How – Multiunit

Multi-Unit Dwelling (MUD) Considerations

• Dedicated parking vs Shared access
• Metering / usage fees
• Potential service upgrades required for existing structures
  – Power management systems may alleviate this issue
• Condo/HOA agreements for homeowner/tenant charging
• Range of equipment and management options

DC Fast Considerations

• 3 Phase Power
• Up to 300kW as of 2020
• Demand Charge Issues
• Redundancy
• Heavy Duty Vehicles
EV Charging - When

- New development
- Redevelopment
- EV driver demand
- Building out “safety net” of charging

EV Charging – Grants & Incentives

- State of Vermont ACCD has offered grants with VW diesel settlement funds for public, workplace and MUD locations. Future grants will require additional State appropriations. [https://accd.vermont.gov/community-development/funding-incentives/electric-vehicle-supply-equipment-evse-grant-program](https://accd.vermont.gov/community-development/funding-incentives/electric-vehicle-supply-equipment-evse-grant-program)

- Utilities are offering public/workplace/MUD incentives for Renewable Energy Standard Tier 3 credits
  - GMP is around $500 per Level 2 port
  - Others generally around $250 per port

- Tesla destination charging program
  - Free equipment, but host pays for installation and energy costs
  - 1 generic EV charging unit for every 2 Tesla
  - Oriented toward lodging/attraction businesses. [https://www.tesla.com/charging-partners](https://www.tesla.com/charging-partners)
Public Charging Availability

218 Locations, including 26 DC Fast Chargers -

VT Building Energy Stretch Code

Stretch code compliance required for Act 250

Commercial (Section C708.1)
- About 2% of parking EV ready
- Half ready to go on occupancy
- Level 1 and/or 2

Residential
- Multifamily with 10+ units
- 4% of parking
- Level 1 or 2 receptacles
2019 CBES EV Requirements

C405.10 Electric Vehicle Charging Stations

New buildings with occupancy groups listed in Table 405.11 shall provide the electrical service capacity to serve the number of Electric Vehicle Charging Parking Spaces in Table C405.11. Electrical service capacity includes use of a listed cabinet, box, or enclosure connected to a conduit linking the parking spaces with the electrical service. Parking lots serving multiple occupancy groups shall use the occupancy group with the largest square feet of finished area.

Exception: Parking spaces are not counted in Table 405.11 if one of the following conditions apply:

1. Parking spaces are intended exclusively for storage of vehicles for retail sale or vehicle service.
2. Parking spaces are separated from the meter by a public right-of-way.
3. Parking spaces which are limited to parking durations of less than an hour.

50% of the parking spaces indicated in Table C405.11, rounded up to the nearest whole number, is the minimum number of Electric Vehicle Supply Equipment (EVSE) or receptacles necessary to function as available electric vehicle charging upon building occupancy. The number of parking spaces indicated in Table C405.11 minus the number of installed EVSE parking spaces is the minimum number of parking spaces that are required to be pre-wired, allowing for future installations when they are needed for use by customers, employees or other users (EVSE-ready). If level 1 service is provided, the required EV Charging Parking Spaces shall also be "level 2 ready" as defined below in this Section C405.10. Electrical service capacity includes use of a listed cabinet, box or enclosure connected to a conduit linking the parking spaces with the electrical service. For parking lots with 25 or more parking spaces, Table C405.11 can be satisfied by either Option A or B in the table.

Parking spaces with EVSE shall be marked for EV use only.

Exception:

1. In Group R-2 buildings the number of parking spaces with EVSE that are marked for "EV use only" need not exceed the number of EV cars driven by occupants of the building. This exception does not reduce the number of EVSE spaces, just the number that are marked for EV use only.
2. In structured parking lots 1/2 of parking spaces, rounded up, with EVSE shall be marked for "EV use only", while the remainder need not be marked for "EV use only". This exception does not reduce the number of EVSE spaces, just the number that are marked for EV use only.

Level 1 Electric Vehicle Charging Parking requires one 120V 20 amp grounded AC receptacle, NEMA 5-20R or equivalent, within 5 feet of the centerline of each EV Charging Parking Space.

Level 2 Electric Vehicle Charging Parking requires one 208/240V 40 amp grounded connection for each electric vehicle charging through dedicated Electric Vehicle Supply Equipment (EVSE) with J1772 connector or AC receptacle, NEMA 14-50, or equivalent, within 5 feet of the centerline for each EV Charging Parking Space.

DC Fast Charging, also referred to as Level 3, Electric Vehicle Charging Parking requires one direct-current (DC) plug for electric vehicle charging through dedicated Electric Vehicle Supply Equipment (EVSE) with either a CHAdeMO or SAE Combined Charging System (CCS) format connector, within 5 feet to the centerline for each EV Charging Parking Space. Other DC Fast Charging plug standards may be accepted as they are developed.

The guideline does not stipulate how the EVSE is provided.

If the design intent is to only provide level 2 charging stations, then the level 1 and level 2 requirements should be added together.

http://depts.vt.edu/energy/building-energy-standards-update

2019 CBES EV Requirements

<table>
<thead>
<tr>
<th>TABLE C405.11 ELECTRIC VEHICLE CHARGING PARKING SPACES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial Building Occupancy*</td>
</tr>
<tr>
<td>-------------------------------</td>
</tr>
<tr>
<td>&lt;25 Parking Spaces in Lot</td>
</tr>
<tr>
<td>Level 1</td>
</tr>
<tr>
<td>Groups A &amp; M-9</td>
</tr>
<tr>
<td>Groups E, F, &amp; H</td>
</tr>
<tr>
<td>Groups I-1, I-2, I-3, &amp; R-4</td>
</tr>
<tr>
<td>Group R-1</td>
</tr>
<tr>
<td>Group R-2</td>
</tr>
</tbody>
</table>

a. See occupancy classification in section C202. If more than one occupancy type is used, the occupancy type with the most square feet of finished building area.

b. 50% of the parking spaces, rounded up to the nearest whole number, shall have EVSE or EVSE-ready cells necessary to function as available electric vehicle charging upon building occupancy. The remainder shall be EVSE-ready.

c. Motor fuel dispensing facilities (gas stations) are exempt from the requirement to provide electric vehicle charging parking spaces.

d. Stand-alone retail stores with fewer than 50 spaces are exempt from the requirement to provide electric vehicle charging parking spaces.

http://depts.vt.edu/energy/building-energy-standards-update
2019 RBES EV Requirements

R404.3 Electric vehicle charging

New parking lots serving multifamily developments of 10 or more units shall provide either level 1 or level 2 electrical service within 5 feet of the centerline of the parking space ("EV Charging Parking Space") with the capacity to serve the number of Electric Vehicle Charging Parking Spaces in Table R404.3. Electrical service capacity includes the use of a listed cabinet, box or enclosure connected to a conduit linking the parking spaces with the electrical service.

Exception: Parking spaces are not counted in Table 405.11 if one of the following conditions apply:
1. Parking spaces are intended exclusively for storage of vehicles for retail sale or vehicle service.
2. Parking spaces are separated from the meter by a public right-of-way.
3. Parking spaces which are limited to parking durations of less than an hour.

Parking spaces with Electric Vehicle Supply Equipment ("EVSE") shall be marked for EV use only.
Exception:
1. The number of parking spaces with EVSE that are marked for "EV use only" need not exceed the number of EV cars driven by occupants of the building. This exception does not reduce the number of EVSE spaces required, just the number that are marked for EV use only.

Level 1 Electric Vehicle Charging Parking requires one 120V 20 amp grounded AC receptacle, NEMA 5-20R or equivalent, within 5 feet of the centerline of each EV Charging Parking Space.

Level 2 Electric Vehicle Charging Parking requires one 208/240V 40 amp grounded connection for each electric vehicle charging through dedicated Electric Vehicle Supply Equipment (EVSE) with J1772 connector or AC receptacle, NEMA 14-50, or equivalent, within 5 feet of the centerline for each EV Charging Parking Space.

https://publicservice.vermont.gov/content/building-energy-standards-update
Electric Vehicle Charging Station (EVCS)
Electric Vehicle Charging Station (EVCS) means the public or private parking space(s) served by electric vehicle supply equipment (EVSE), including all signs, information, pavement, surfaces, surface markings, fee collections systems, and protective equipment in which a vehicle is recharged.

Electric Vehicle Supply Equipment (EVSE)
Electric Vehicle Supply Equipment (EVSE) means the protective system which communicates with electric vehicles and monitors electrical activity to ensure safe charging, inclusive of all components: the conductors; the undergrounded, grounded, and equipment grounding conductors; electrical vehicle connectors; attachment plugs; and all other fittings devices, power outlets, or apparatus installed specifically for the purposes of delivering energy from the grid to an electric vehicle.

Electric Vehicle (EV)
Electric Vehicle means a class of automobiles that use electric motors powered by energy drawn from the grid or off-grid electric sources into a battery system for propulsion. This definition includes all-electric (AEV) and plug-in hybrid electric vehicles (PHEV).

Charging Levels
Standardized indicators of electrical force, or voltage, at which an EV’s battery is recharged. EVSE is classified into categories by the rate at which batteries are charged: Alternating Current (AC) Level 1; AC Level 2; and Direct Current Fast Charging (DCFC).
Planning & Permitting – Accessory Use

Accessory Use Standards
Electric vehicle charging stations are permitted as an accessory residential and non-residential use within an approved parking area or approved fueling station service area in any zoning district and will not be subject to the provisions of this section.

Accessory Structure Standards
Electric vehicle charging stations and above-ground electric vehicle supply equipment are permitted as an accessory structure in any zoning district subject to the provisions of this section. (Typical accessory structure provisions include footprint maximums, modest setbacks, and height limitations.)

Planning & Permitting - Exemptions

Landowners do not need to obtain a zoning permit for:

- Interior alterations to an existing structure for electric vehicle charging stations that do not change any of the structure’s exterior dimensions;
Planning & Permitting – Parking Standards

The applicant:
• May provide electric vehicle charging stations within parking areas as an allowed accessory use in any zoning district;
• Will not have to provide additional parking when spaces are converted and/or reserved for charging vehicles;
• Must provide a cord of sufficient length to accommodate port variations in passenger vehicles or otherwise allow vehicles to park front-to-back or back-to-front;
• Must protect and place ground and wall-mounted equipment to prevent physical damage to the control device by vehicles and snow plows (e.g. bollards and/or curbing);
• Must count electric vehicle charging station parking spaces toward the minimum amount of parking requirements (if any) under this section;
• May/Must provide a minimum of 1 charging station for every 10 parking spaces required.

Planning & Permitting – Sign Standards

The applicant:
• Must provide each electric vehicle charging station with on-site signs approved by the Manual Uniform Traffic Control Devices to identify electric vehicle parking (general service signs) and restrict access (regulatory signs) by stating, “no parking except for electric vehicle charging” unless waived by the appropriate municipal panel or zoning administrator (see example signage above). For purposes of this section, “charging” means that an electric vehicle is parked at an electric vehicle charging station and is connected to the electric vehicle supply equipment port. If time limits or vehicle removal provisions are to be enforced, regulatory signage including parking restrictions shall be installed immediately adjacent to, and visible from the electric vehicle charging station.
Performance Standards

The applicant:
• Must demonstrate that the proposed development has been designed to facilitate use of energy-efficient modes of transportation such as walking, biking, transit, and electric vehicles as feasible and appropriate given the location and use (If subject to site plan or conditional use review)
• May establish and collect a service fee for the use of an approved electric vehicle charging station without affecting the land use classification of the property;
• Must construct with equipment and service facilities that are designed and/or located to prevent water from entering or accumulating within the components in river corridor areas;
• Must place charging equipment and manage cords to avoid tripping hazards in public locations;
• Must locate ancillary mechanical equipment and components (but not the charging station itself) so that they will be screened from view to the maximum extent feasible, and if adequate screening is not possible use materials and colors that will camouflage the ancillary equipment.

Conclusion

• EVs are here
• Home charging options are critical for most EV drivers
• Building new EV-ready housing offers massive savings compared to retrofitting charging
• Municipalities can help by:
  – Ensuring new developments take EV charging into consideration
  – Streamlining EV charging planning and permitting requirements
  – Considering EVs for fleet vehicles and supporting employee/public charging
  – Spreading the word through energy committees, events, etc
Discussion

Contact
Dave Roberts
droberts@veic.org
Project Background

**Project Team:**
Matt Boulanger – Planning Director and Zoning Administrator, Town of Williston
Bryan Davis – Senior Transportation Planner, CCRPC
Marshall Distel – Transportation Planner, CCRPC
Jonathan Slason – Director, RSG
David Grover – Consultant, RSG
Gabby Freeman – Analyst, RSG
Agenda

• Why do this project?
• What is shared parking?
• The Shared Parking Analysis tool
• Example
• Questions

Why Do This Project?

• Most U.S. communities are observing an oversupply of parking
• Parking standards are excessive and err toward oversupply
• Parking is routinely required but overall supplies are not monitored
  • Infill development can increase value without increasing impervious area
  • Turn parking lots into useful buildings
  • How much parking do we really need?
Shared Parking

• One spot for two or more land uses without conflict or encroachment
• Different land uses = different peak demand times
  • Land use type
  • Time
  • Day
  • Month

Shared Parking Analysis Tool

• Assigns parking spaces based on:
  – Demand
  – Supply
  – Parking lot preference
• Models parking demand all time combinations
• Excel input data
• Output: demand and utilization across parking lots and time combinations
• Python script run in ArcMap
• Free and open source
Input Data

• Parking Lots file (Excel file)
• Generators file (Excel file)
• Land Use Demand file (Excel file)
• Adjustment Factors file (python pickle file)

• Files can be generated in GIS or in Excel

---

Input Data – Parking Lots File

• Parking Lots file (Excel file, user created)

<table>
<thead>
<tr>
<th>Name</th>
<th>Spaces</th>
<th>Lot_UID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harvest Ln</td>
<td>102</td>
<td>1</td>
</tr>
<tr>
<td>Harvest Ln</td>
<td>58</td>
<td>2</td>
</tr>
<tr>
<td>Harvest Ln</td>
<td>316</td>
<td>3</td>
</tr>
<tr>
<td>Harvest Ln</td>
<td>198</td>
<td>4</td>
</tr>
<tr>
<td>Harvest Ln</td>
<td>318</td>
<td>5</td>
</tr>
<tr>
<td>Harvest Ln</td>
<td>215</td>
<td>6</td>
</tr>
</tbody>
</table>
Input Data – Generators File

- Name – Name of the parking generator
- Location – Unique GIS ID
- LUC and Type – type of land use
- Size and Unit type
- Gen_ID – Unique ID associated with each generator.

- ParkingLots – Parking lot preferences

<table>
<thead>
<tr>
<th>Name</th>
<th>Location</th>
<th>LUC</th>
<th>Type</th>
<th>Size</th>
<th>Unit</th>
<th>Gen_UID</th>
<th>ParkingLots</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optometrist</td>
<td>10482</td>
<td>63</td>
<td>Medical/Dental Office</td>
<td>3.643 ksf GFA</td>
<td>1</td>
<td>3;5;2;6;1</td>
<td></td>
</tr>
<tr>
<td>Salon</td>
<td>10859</td>
<td>10</td>
<td>Retail</td>
<td>7.176 ksf GLA</td>
<td>2</td>
<td>3;5;2;6;1</td>
<td></td>
</tr>
<tr>
<td>HOME DEPOT U.S.A., INC.</td>
<td>11052</td>
<td>10</td>
<td>Retail</td>
<td>100 ksf GLA</td>
<td>3</td>
<td>3;6;5;1;4</td>
<td></td>
</tr>
<tr>
<td>WAL-MART STORES, INC.</td>
<td>11105</td>
<td>10</td>
<td>Retail</td>
<td>100 ksf GLA</td>
<td>4</td>
<td>3;5;2;6;1</td>
<td></td>
</tr>
</tbody>
</table>

“ParkingLots” column determines parking preference
- Everyone chooses parking lot 3 first
- Walmart customers choose lot 5 next
- Home Depot customers choose lot 6 next

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<td>3;5;2;6;1</td>
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</tr>
<tr>
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<td>3;6;5;1;4</td>
</tr>
<tr>
<td>WAL-MART STORES, INC.</td>
<td>3;5;2;6;1</td>
</tr>
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</table>
Input Data – Demand and Adjustment Factors

- Demand equals product of:
  - Peak demand
  - Time of day factor
  - Weekday/weekend factor
  - Month factor
  - 500 total combinations
- Factors from Shared Parking
  - Can be changed by user, e.g.
  - ITE Parking Generation
  - Town or City Regulations
  - Shared Parking, Third Edition

Caveats

- Model is only as good as the input data
  - Generator sizes should be confirmed
  - User determines lot preference order
- Factors are averages of national studies
  - Calibrate to local conditions for better accuracy
- Balance accuracy with expediency
  - Consider goals and effort required for large areas
Example Model Run – Walmart and Home Depot

<table>
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<tr>
<td>HOME DEPOT U.S.A., INC.</td>
<td>3;6;5;1;4</td>
</tr>
<tr>
<td>WAL-MART STORES, INC.</td>
<td>3;5;2;6;1</td>
</tr>
</tbody>
</table>

- Shows spaces left
- Lots 3 and 6 fully utilized
- Lots 1, 2, and 4 empty
Example Model Run – Add a Restaurant

- Shows spaces left
- Lots 3 and 6 fully utilized
- Lot 1 (restaurant) almost full
- Lots 2 and 4 empty
- Don’t build more parking for restaurant!
Example Uses

- Mandate shared parking for new developments when parking supply is excessive
- Test shared parking plans (or lack thereof)
- Estimate parking demand in planned mixed-use developments
- Examine the effects of converting parking spaces to a higher value use

Questions?
Contacts

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