Utility Analytics WEEK
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The Future of EVs: Adoption, Transformer Capacity, and Charger Identification

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Rappahannock Electric Cooperative

RAPPAHANNOCK ELECTRIC COOPERATIVE

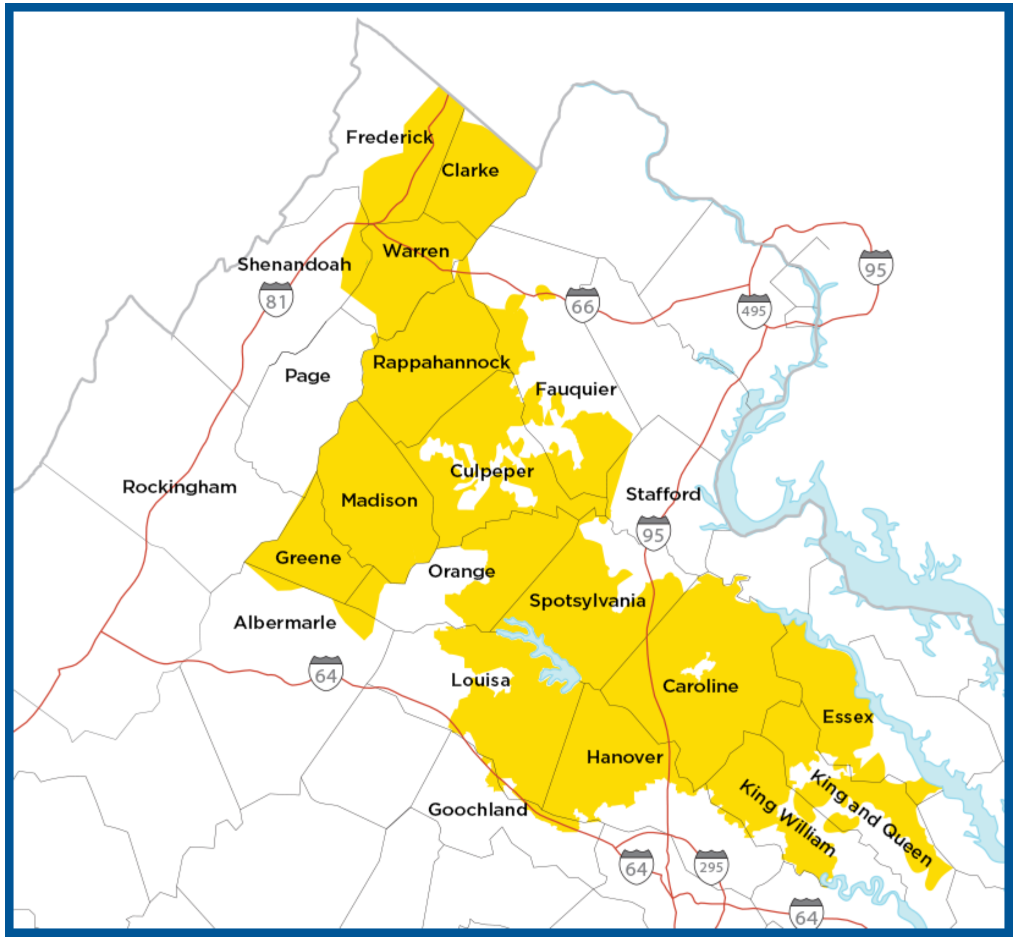
RELIABLE • AFFORDABLE • FOCUSED ON YOU

Distribution Electric Cooperative in Virginia serving 22 Counties

Just over 170,000 connections

More than 17,000 miles of line

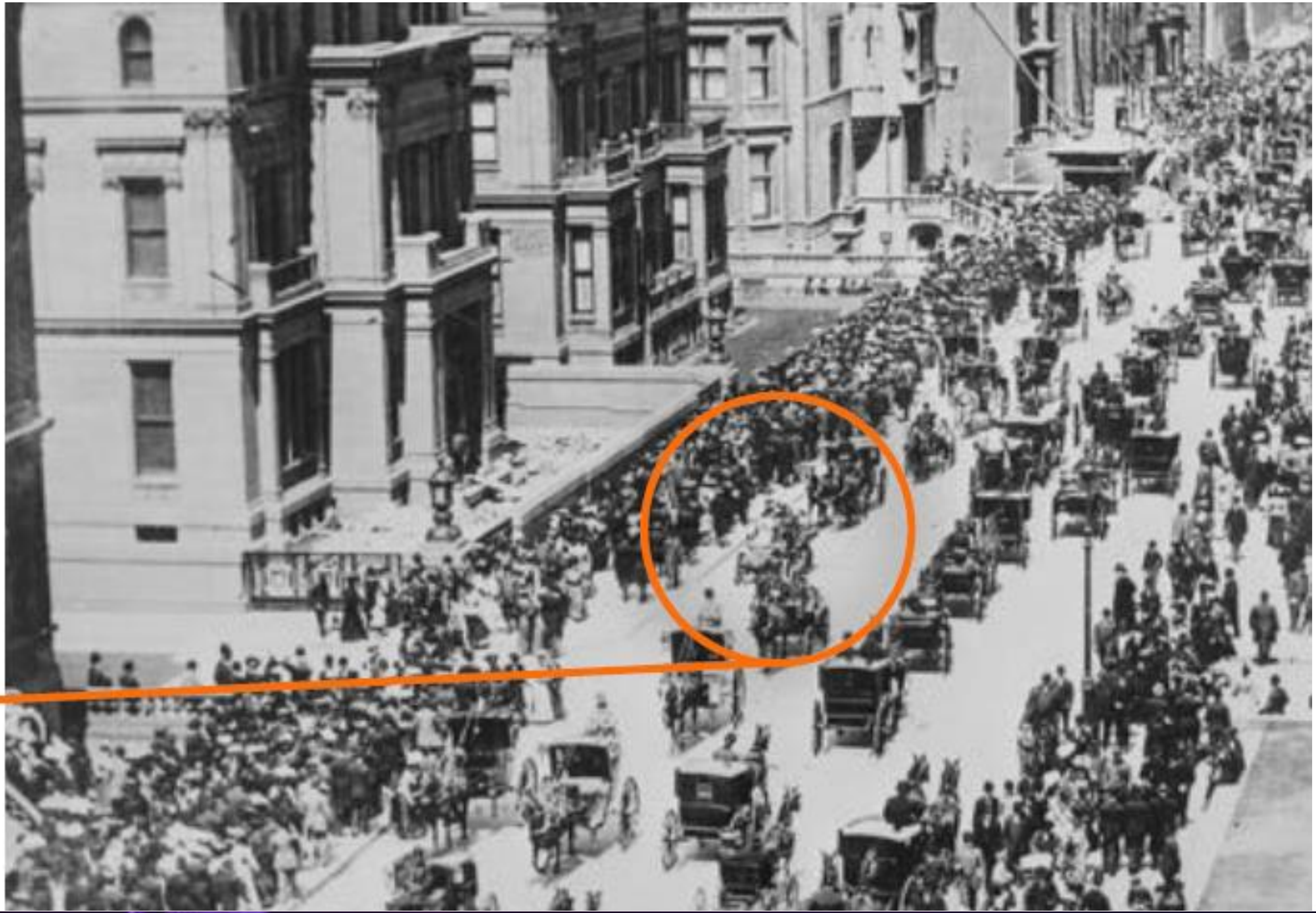
400+ Employees



5th AVE NYC

1900

Where is **the car?**



5th AVE NYC

1913

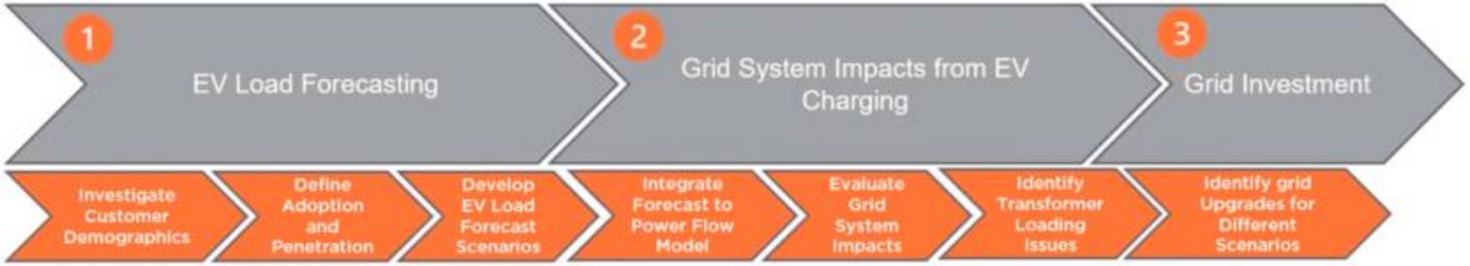
Where is **the horse?**

What Did We Do?

After the initial EV Impact Study:

- Use adoption forecast and modeling to create the following visualizations:
  1. EV Adoption Propensity
  2. Level 2 Charging Detection
  3. Circuit Level Analysis
  4. Distribution Transformer Analysis

EV Impact Study



EV Member Readiness Analytics

EV Adoption Propensity

Estimating EV-Adoption Impact on the System

Estimate the total increase to system load using three 15-year EV adoption rates

- Apply at system and circuit levels

Estimating Level-2 EV Chargers
Total chargers added to system and circuit under **2036** high, medium and low adoption scenarios

- *63.96%, 48.61%, 37.26% adoption*
- *Apply to residential meters, with rate schedules A1 & AO1*
- *Two EVs per charger*

Level-2 EV Charger Types:
EV adoption by vehicle type

- *65% chargers with 7.7 kW load (car)*
- *35% chargers with 19.2 kW load (pickup)*
- *Two EVs per charger*

EV Energy Usage:
Expected annual energy usage by EV type

- *Each Car – 3822 kWH per year*
- *Each Pickup – 9100 kWH per year*
- *Two EVs per charger*

Could additionally consider

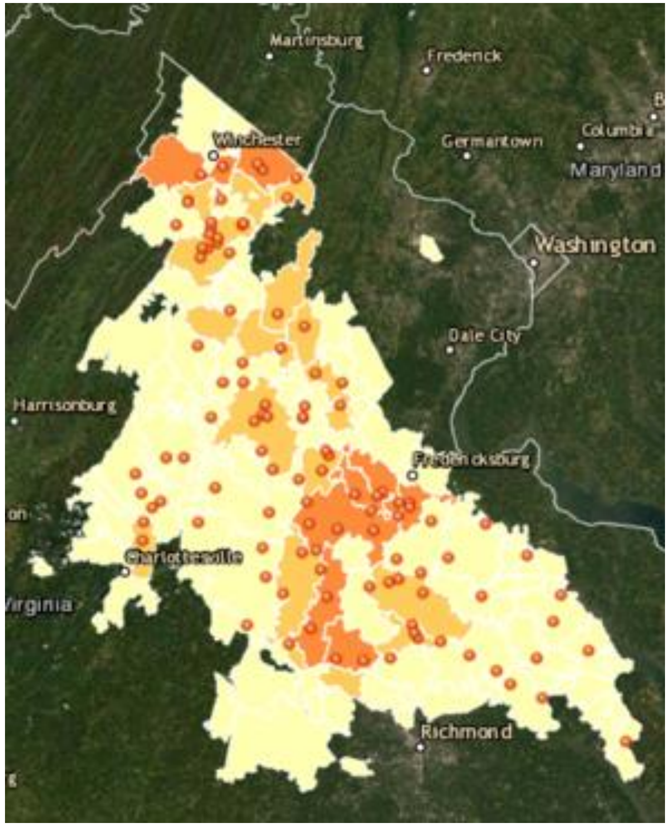
- *Level-1 as well as Level-2 charging*
- *Multiple-dwelling-unit charger ratios*

Number of EV chargers adds load

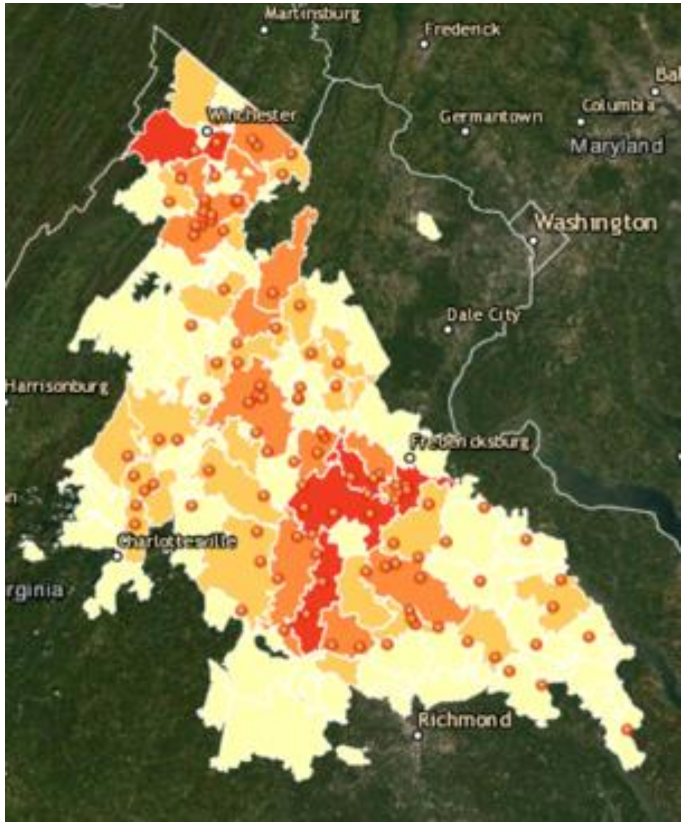
155k Meters	99k Chargers / 198k EVs	64k 7.7 kW / 35k 19.2 kW / 128k Cars / 70k Pickups	1,123 MWH
155k Meters	75k Chargers / 150k EVs	49k 7.7 kW / 26k 19.2 kW / 98k Cars / 52k Pickups	853 MWH
155k Meters	58k Chargers / 116k EVs	38k 7.7 kW / 20k 19.2 kW / 76k Cars / 40k Pickups	654 MWH

Number of EVs adds energy usage

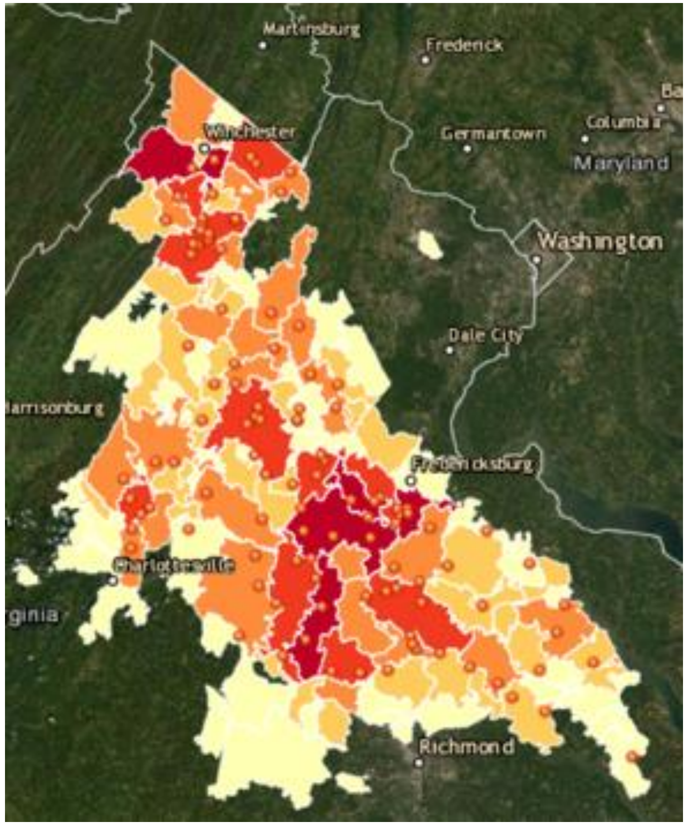
2036 Low
Adoption: 37%
LVL 2: 58,000



2036 Med
Adoption: 48%
LVL 2: 75,000



2036 High
Adoption: 64%
LVL 2: 99,000



The adoption of new technology generally follows the diffusion of innovation theory

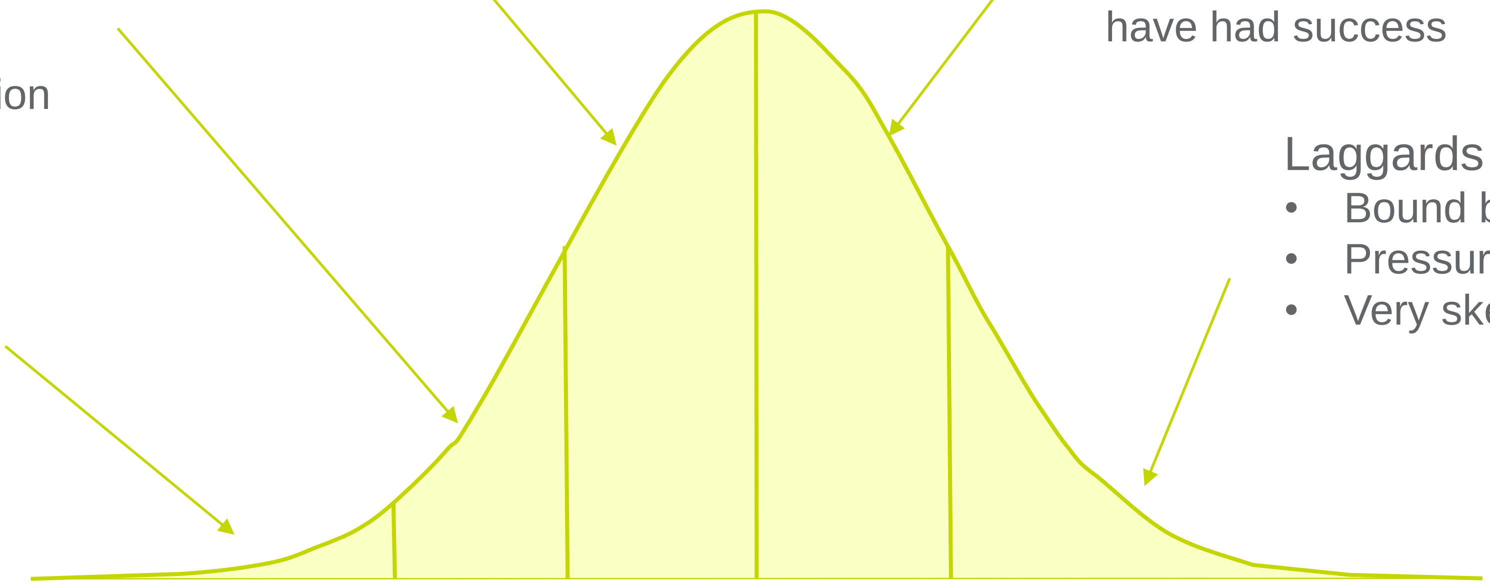
Innovators 3.2%
- Desire to be first
- Venturesome
- Take risks
- Minimal convincing

Early Adopters 13.6%
- Opinion leaders
- Embrace change
- Financial liquidity
- Advanced education

Early Majority 34.1%
- Need evidence of effectiveness
- Like success stories

Late Majority 34.1%
- Adopt after the average participant
- Skeptical of new technology
- Want to see how many others have had success

Laggards 16.8%
- Bound by tradition
- Pressure from others to adopt
- Very skeptical of change



Five stages of adoption:
1) Knowledge/Awareness 2) Persuasion 3) Decision 4) Implementation 5) Continuation

EV Adoption Propensity and projection by 2036

Purpose: Enables a circuit level view of adoption based on multi-variable model

Key Features:

- **Segmented adoption based on:**
  - Early Adopters
  - Early Majority
  - Late Majority
  - Laggards
- Aggregated to adoption % with details on additional vehicles and kWh increase

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A Touchstone Energy Cooperative

EV Adoption Projection - by Circuit

2036
Forecast Adoption Year

EV Charging

- Assign to each meter an expected number of EV cars and EV pickups based on zip-code adoption rate
- Aggregate the total expected EV cars and pickups for each circuit based on meter-to-circuit connectivity
- Estimate load as described on "Adoption by Zip" tab

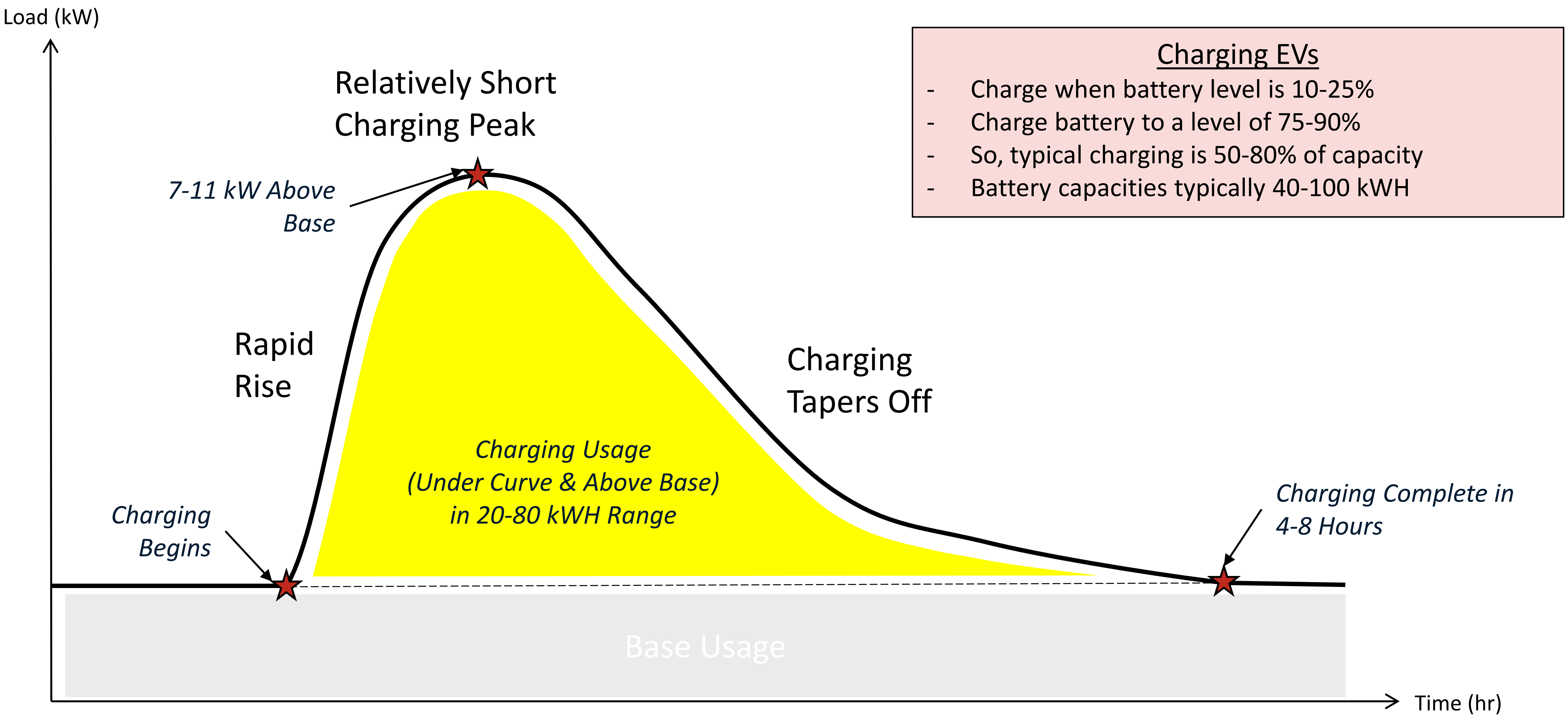
* EV Adopters, EV Cars and EV Pickups numbers may not sum as expected due to rounding

Detailed EV Adoption Projection, by Circuit

Rank	Substation	Circuit	Meters	Adoption %	EV Adopters*	EV Cars*	EV Pickups*	Annual EV k...	Daily EV kWH	Hourly EV kWH
1	Oakshade	Drysdale / Cant...	639	42	266	346	186	3018003	8269	345
2	Warrenton	Nash	306	41	126	164	88	1426609	3909	163
3	Somerset DSP	Wilderness Shor...	623	41	254	330	178	2881384	7894	329
4	Wilderness	West Side L. O. W.	691	41	282	366	197	3195885	8756	365
5	Wilderness	East Side L. O. W.	501	41	204	266	143	2317132	6348	265
6	Lake of the Woo...	Battlefield	38	41	16	20	11	175751	482	20
7	Lake of the Woo...	Church	939	41	383	498	268	4342889	11898	496
8	Lake of the Woo...	Rt 601	1039	41	424	551	297	4803148	13159	548
9	Paytes	Locust Grove	316	40	128	166	90	1450006	3973	166
10	Wilderness	South Side L. O. ...	431	40	174	227	122	1977172	5417	226
11	Warrenton	Rt 211 West	404	40	163	212	114	1847525	5062	211
12	Somerset DSP	Walmart	582	40	234	304	164	2650662	7262	303
13	Orleans	Conde	566	40	225	293	158	2552050	6992	291
14	Somerset DSP	Germanna	59	40	23	30	16	265234	727	30
15	Orleans	Dollar	312	40	124	161	87	1401588	3840	160
16	Orleans	Jerrys Shop	645	40	255	332	179	2894643	7931	330
17	Webtown DSP	Shenandoah Ret...	320	40	127	165	89	1435970	3934	164
18	Webtown DSP	Pine Grove	166	40	66	85	46	744846	2041	85
19	Clevenger's Cor...	Colvin Rd	281	39	111	144	78	1258369	3448	144
20	Vontay	Montpelier	559	39	221	287	155	2502783	6857	286

Level 2 Charging Detection

EV-Charging-Like Load Detection



Pre-Screening for Potential Level-2 Charging

Residential Meters: The major source of Uncertainty with Level 2 Charging

Expect businesses to select rate schedules that reflect EV charging.

Maximum Usage: Level 2 Chargers Use Approximately 7-11 kW

Level 2 charging should yield **hourly usage values above 7 kWH.**

- *Usage levels to estimate loading*
- *Hourly reads on residential meters*

Initial screening shows that ~94,000 of REC's ~173,000 meters are unlikely to have any unknown and problematic Level 2 Charging

- Simplifies search for EV-Charging-Like usage patterns
- Allows more focused consideration of those meters that pass screening

Maximum Load Increase: Level 2 Charging Should Add to Base Usage

Level 2 charging should yield **load increases greater than 6 kW**

- *Usage levels to estimate loading*
- *Focus on two-hour increases*
- *6 kW to account for base variation*

Sustained, Elevated Loads: Level 2 Charging Takes Several Hours

Level 2 charging should yield **sustained load increases over several hours**

- *Usage levels to estimate loading*
- *Look for four-hour long loading*
- *Total 25-kWH usage in four hours*

14.3K
Not Residential

33.6K
Almost Certainly Not: No 7-kWH usage

11.6K
Very Unlikely: No 6-kW Jumps

34.7K
Unlikely: No 28-kWH four-hour periods

1898 & Co.

Model Validation using known Meters

Purpose: Examine usage on meters with member-reported Level-2 charging to understand accuracy of Level-2 charging identification across the system

Key Features:

Identifies baseline for ML model to train and identify Level 2 charging from members that did not report EV ownership

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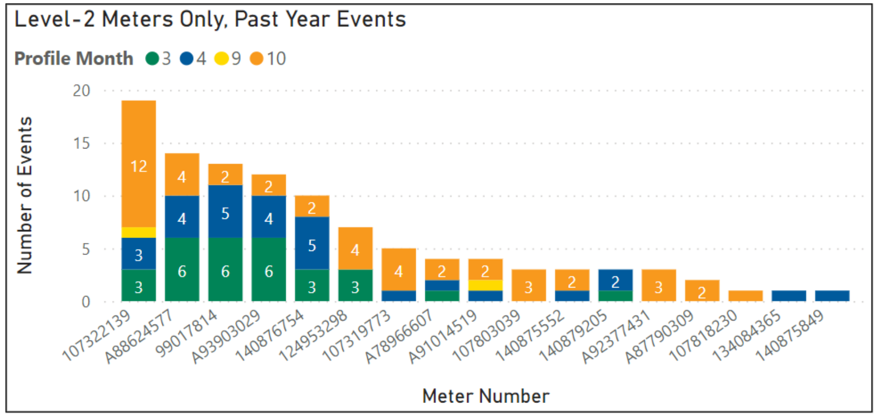
Charging-Like Events on Reported Level-2 Meters Last 12 Months

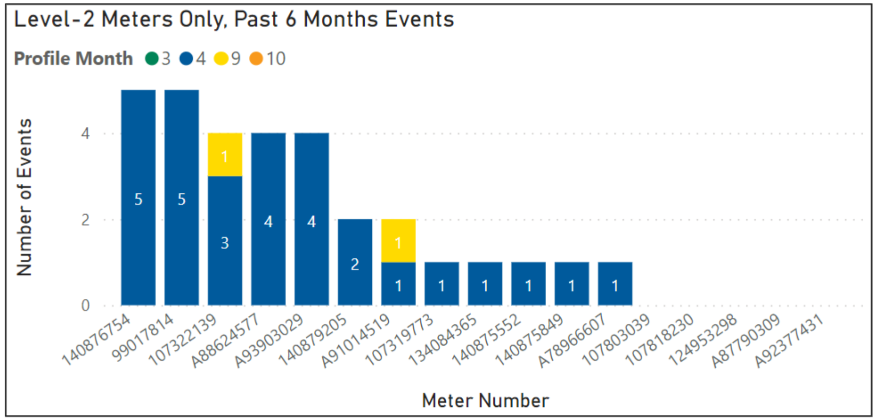
Each month's full data is available approximately the 5th day of the following month

Shoulder Month (Yes = 1)

1

Meter Number	Past Year	Last 6 Months
107322139	19	4
A88624577	14	4
99017814	13	5
A93903029	12	4
140876754	10	5
124953298	7	0
107319773	5	1
A78966607	4	1
A91014519	4	2
107803039	3	0
140875552	3	1
140879205	3	2
A92377431	3	0
A87790309	2	0
107818230	1	0
134084365	1	1
140875849	1	1
Total	**105**	**31**





Calculated Lower Bound for Expected Number of Charging-Like-Event Detections:

- Annual Usage 3822 kWH,
- With 80% home charging, annual home usage of 3058 kWH
- With 80% charging of a 100 kWH battery, 38 home charges per year
- Twelve months per year, 3 home charges per month
- Reasonably expect to find 3 charging events in some shoulder month

Non-Level-2 Meters Comparison

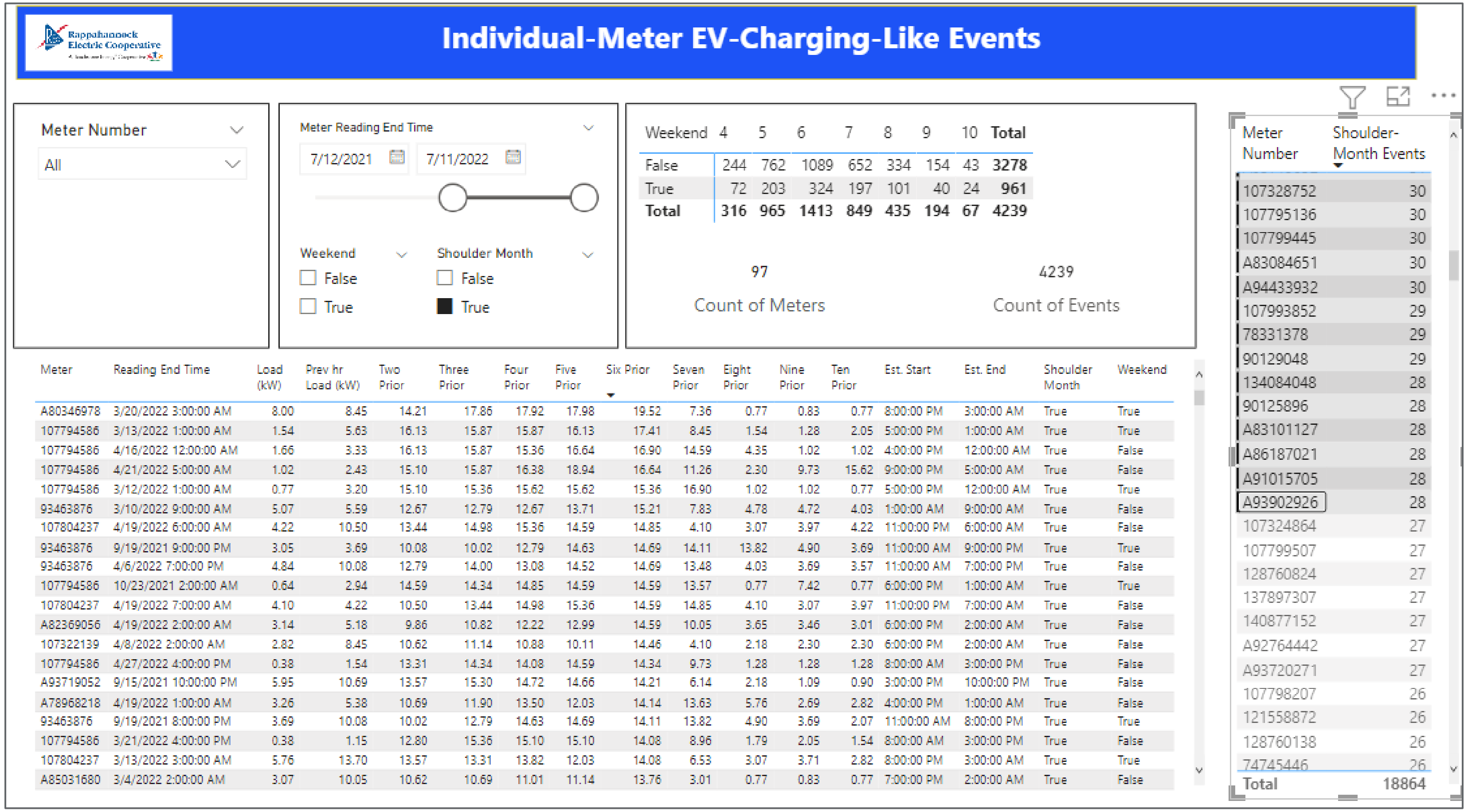
Past Two Shoulder Month Patterns	# of Meters	% of All Meters
0	7627	51.34%
1	5936	39.96%
2	898	6.04%
3	221	1.49%
4	85	0.57%
5	37	0.25%
6	13	0.09%
7	13	0.09%
8	7	0.05%
9	6	0.04%
10	3	0.02%
11	3	0.02%
12	1	0.01%
13	2	0.01%
14	2	0.01%
17	1	0.01%
19	1	0.01%
Total	**14856**	**100.00%**

EV-Charging-Like Events for Meters

Purpose: Examine charging-like events on individual meters to assist in identifying those meters likely to have Level-2 EV charger usage

Key Features:

Identify EV-like events on shoulder months for adoption model refinement, and support EV rate marketing.



Weekend	4	5	6	7	8	9	10	Total
False	244	762	1089	652	334	154	43	3278
True	72	203	324	197	101	40	24	961
Total	316	965	1413	849	435	194	67	4239

Meter	Reading End Time	Load (kW)	Prev hr Load (kW)	Two Prior	Three Prior	Four Prior	Five Prior	Six Prior	Seven Prior	Eight Prior	Nine Prior	Ten Prior	Est. Start	Est. End	Shoulder Month	Weekend
A80346978	3/20/2022 3:00:00 AM	8.00	8.45	14.21	17.86	17.92	17.98	19.52	7.36	0.77	0.83	0.77	8:00:00 PM	3:00:00 AM	True	True
107794586	3/13/2022 1:00:00 AM	1.54	5.63	16.13	15.87	15.87	16.13	17.41	8.45	1.54	1.28	2.05	5:00:00 PM	1:00:00 AM	True	True
107794586	4/16/2022 12:00:00 AM	1.66	3.33	16.13	15.87	15.36	16.64	16.90	14.59	4.35	1.02	1.02	4:00:00 PM	12:00:00 AM	True	False
107794586	4/21/2022 5:00:00 AM	1.02	2.43	15.10	15.87	16.38	18.94	16.64	11.26	2.30	9.73	15.62	9:00:00 PM	5:00:00 AM	True	False
107794586	3/12/2022 1:00:00 AM	0.77	3.20	15.10	15.36	15.62	15.62	15.36	16.90	1.02	1.02	0.77	5:00:00 PM	12:00:00 AM	True	True
93463876	3/10/2022 9:00:00 AM	5.07	5.59	12.67	12.79	12.67	13.71	15.21	7.83	4.78	4.72	4.03	1:00:00 AM	9:00:00 AM	True	False
107804237	4/19/2022 6:00:00 AM	4.22	10.50	13.44	14.98	15.36	14.59	14.85	4.10	3.07	3.97	4.22	11:00:00 PM	6:00:00 AM	True	False
93463876	9/19/2021 9:00:00 PM	3.05	3.69	10.08	10.02	12.79	14.63	14.69	14.11	13.82	4.90	3.69	11:00:00 AM	9:00:00 PM	True	True
93463876	4/6/2022 7:00:00 PM	4.84	10.08	12.79	14.00	13.08	14.52	14.69	13.48	4.03	3.69	3.57	11:00:00 AM	7:00:00 PM	True	False
107794586	10/23/2021 2:00:00 AM	0.64	2.94	14.59	14.34	14.85	14.59	14.59	13.57	0.77	7.42	0.77	6:00:00 PM	1:00:00 AM	True	True
107804237	4/19/2022 7:00:00 AM	4.10	4.22	10.50	13.44	14.98	15.36	14.59	14.85	4.10	3.07	3.97	11:00:00 PM	7:00:00 AM	True	False
A82369056	4/19/2022 2:00:00 AM	3.14	5.18	9.86	10.82	12.22	12.99	14.59	10.05	3.65	3.46	3.01	6:00:00 PM	2:00:00 AM	True	False
107322139	4/8/2022 2:00:00 AM	2.82	8.45	10.62	11.14	10.88	10.11	14.46	4.10	2.18	2.30	2.30	6:00:00 PM	2:00:00 AM	True	False
107794586	4/27/2022 4:00:00 PM	0.38	1.54	13.31	14.34	14.08	14.59	14.34	9.73	1.28	1.28	1.28	8:00:00 AM	3:00:00 PM	True	False
A93719052	9/15/2021 10:00:00 PM	5.95	10.69	13.57	15.30	14.72	14.66	14.21	6.14	2.18	1.09	0.90	3:00:00 PM	10:00:00 PM	True	False
A78968218	4/19/2022 1:00:00 AM	3.26	5.38	10.69	11.90	13.50	12.03	14.14	13.63	5.76	2.69	2.82	4:00:00 PM	1:00:00 AM	True	False
93463876	9/19/2021 8:00:00 PM	3.69	10.08	10.02	12.79	14.63	14.69	14.11	13.82	4.90	3.69	2.07	11:00:00 AM	8:00:00 PM	True	True
107794586	3/21/2022 4:00:00 PM	0.38	1.15	12.80	15.36	15.10	15.10	14.08	8.96	1.79	2.05	1.54	8:00:00 AM	3:00:00 PM	True	False
107804237	3/13/2022 3:00:00 AM	5.76	13.70	13.57	13.31	13.82	12.03	14.08	6.53	3.07	3.71	2.82	8:00:00 PM	3:00:00 AM	True	True
A85031680	3/4/2022 2:00:00 AM	3.07	10.05	10.62	10.69	11.01	11.14	13.76	3.01	0.77	0.83	0.77	7:00:00 PM	2:00:00 AM	True	False

Meter Number	Shoulder-Month Events
107328752	30
107795136	30
107799445	30
A83084651	30
A94433932	30
107993852	29
78331378	29
90129048	29
134084048	28
90125896	28
A83101127	28
A86187021	28
A91015705	28
A93902926	28
107324864	27
107799507	27
128760824	27
137897307	27
140877152	27
A92764442	27
A93720271	27
107798207	26
121558872	26
128760138	26
74745446	26
Total	18864

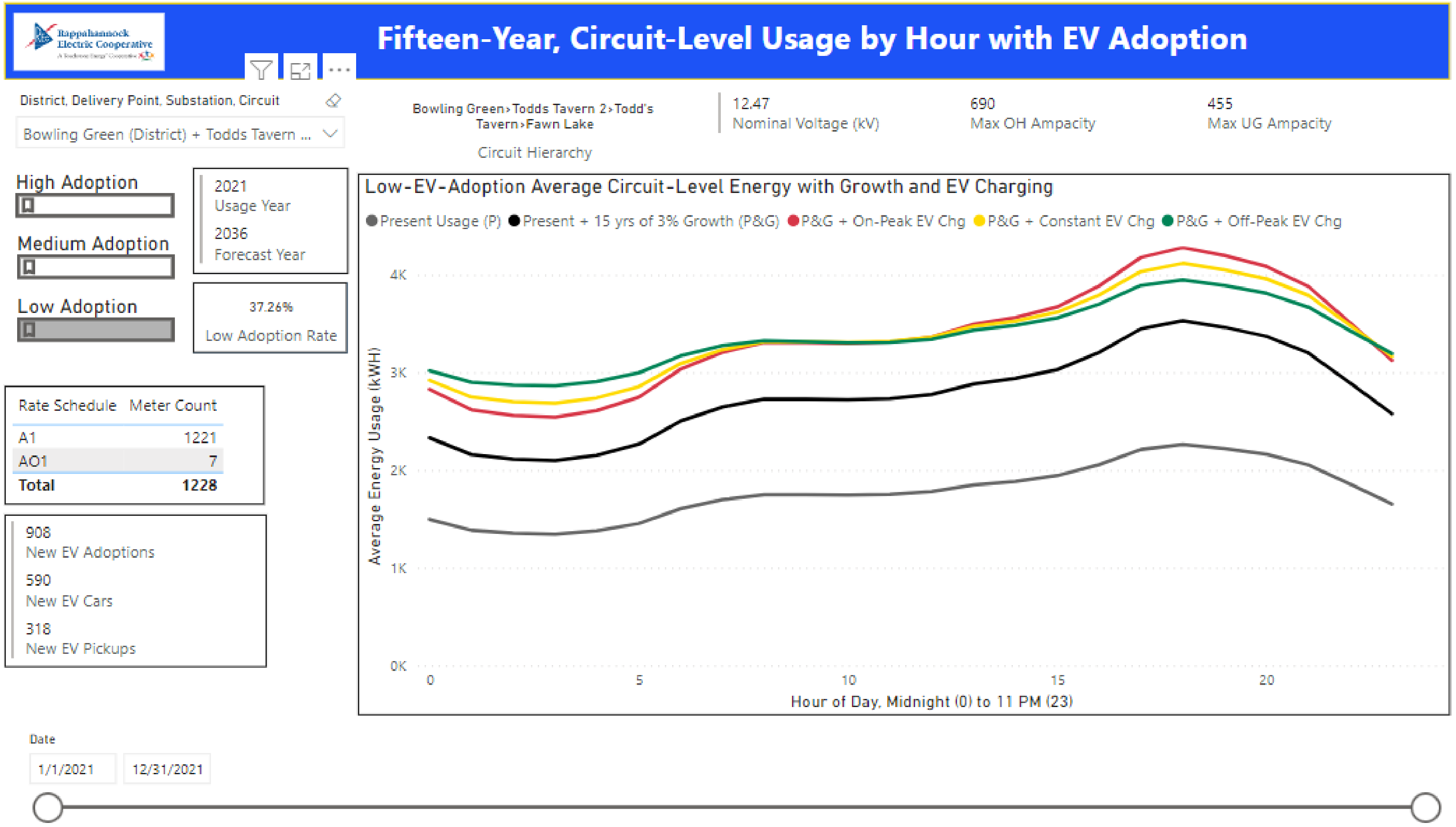
Circuit Level Analysis

Circuit Loading with EV Adoption

Purpose: Enable loading analysis of entire circuit with forecasted kWh from EV adoption at low/medium/high levels.

Key Features:

- Pull daily load from each circuit
- Use EV propensity forecast and low/med/high to forecast impact on load
- Analyze increased load based on/off peak charging behaviors



Transformer Loading Map

Purpose: Provide a quick means of visually identifying under and overloaded transformers and the high-level details associated with the loading of each individual transformer.

Key Features:

- **Asset Hierarchy Slicer:** Allows the user to drill down from substation to circuit, to distribution transformer.
- **Mapbox Map:** Uses transformer latitude and longitude to locate each transformer and display its 99th percentile loading.
- **Transformer Loading Statistics:** Provides the high-level loading details of each transformer and is easily exportable to excel for internal sharing and individual analysis

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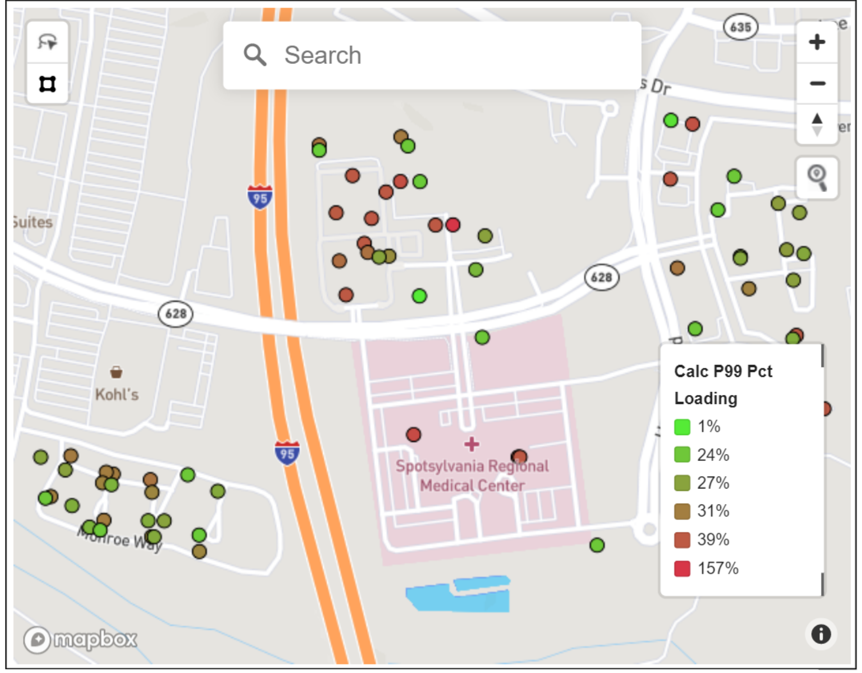
Distribution Transformer Loading Heat Chart

Asset Hierarchy

Slabtown (Operations SCADA_Hiera...

Slabtown › Hospital › T0449977 › 9

Filtered Hierarchy



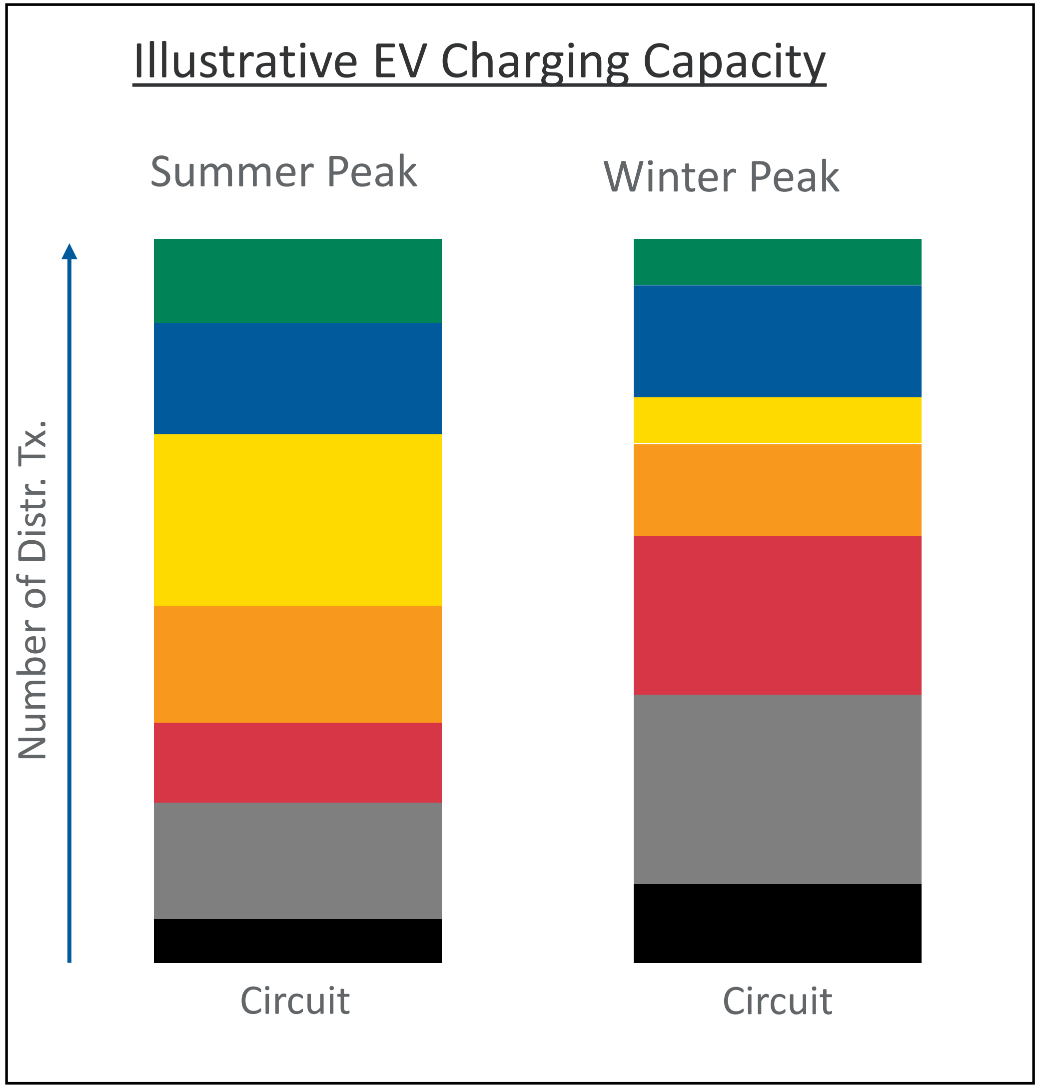
Each circle represents one distribution transformer, with the color indicating the transformer's P99 Pct Loading value. The transformer with highest P99 Pct Load is red; the transformer with lowest P99 Pct Load is white; those between are shades of red/white, with more red indicating higher loading. Selecting circles turns them yellow.

Calculated Transformer Loading (Assumes 95% Power Factor*)

Circuit	Tx Bank ID	Rtd kVA	Rtd kW*	Max kW	Max % Load	P99 % Load	P95 % Load	P50 % Load
Hospital	T0125797	15.00	14.25	22.53	158%	157%	143%	70%
Hospital	T0071289	500.00	475.00	667.20	140%	86%	83%	67%
Hospital	T0168342	15.00	14.25	11.16	78%	75%	55%	22%
Hospital	T0352709	150.00	142.50	96.96	68%	65%	60%	24%
Hospital	T0225595	2,500.00	2,375.00	1,324.32	56%	51%	48%	32%
Hospital	T0006714	150.00	142.50	65.54	46%	44%	41%	5%
Hospital	T0371029	167.00	158.65	89.22	56%	44%	38%	19%
Hospital	T0343763	167.00	158.65	81.66	51%	42%	37%	18%
Hospital	T0122790	167.00	158.65	77.70	49%	42%	36%	19%
Hospital	T0147814	167.00	158.65	83.07	52%	42%	37%	18%
Hospital	T0209946	167.00	158.65	73.60	46%	42%	36%	20%
Hospital	T0077300	167.00	158.65	70.11	44%	42%	38%	1%
Hospital	T0067387	2,500.00	2,375.00	1,048.32	44%	42%	38%	26%
Hospital	T0312748	167.00	158.65	72.13	45%	39%	34%	16%
Hospital	T0358536	167.00	158.65	72.70	46%	39%	34%	18%
Hospital	T0125912	167.00	158.65	75.01	47%	39%	33%	17%
Hospital	T0233466	167.00	158.65	83.33	53%	38%	32%	19%
Hospital	T0234014	167.00	158.65	72.64	46%	38%	34%	20%
Hospital	T0354656	167.00	158.65	74.24	47%	37%	32%	18%
Hospital	T0278342	167.00	158.65	61.18	39%	35%	30%	16%
Hospital	T0237689	167.00	158.65	63.49	40%	34%	30%	15%
Hospital	T0273243	167.00	158.65	67.33	42%	33%	29%	14%
Hospital	T0257319	100.00	95.00	39.94	42%	33%	30%	18%
Hospital	T0212234	25.00	23.75	8.19	34%	33%	32%	18%
Hospital	T0157715	100.00	95.00	34.75	37%	32%	27%	14%
Hospital	T0129821	167.00	158.65	79.10	50%	32%	27%	14%
Hospital	T0144251	100.00	95.00	35.84	38%	32%	28%	15%
Hospital	T0280745	100.00	95.00	36.29	38%	32%	27%	15%
Hospital	T0290181	100.00	95.00	34.11	36%	31%	28%	16%
Hospital	T0231838	100.00	95.00	37.12	39%	31%	27%	16%
Hospital	T0049124	167.00	158.65	59.14	37%	31%	27%	13%
Hospital	T0142768	100.00	95.00	33.66	35%	31%	27%	15%

Distribution Transformer Analysis

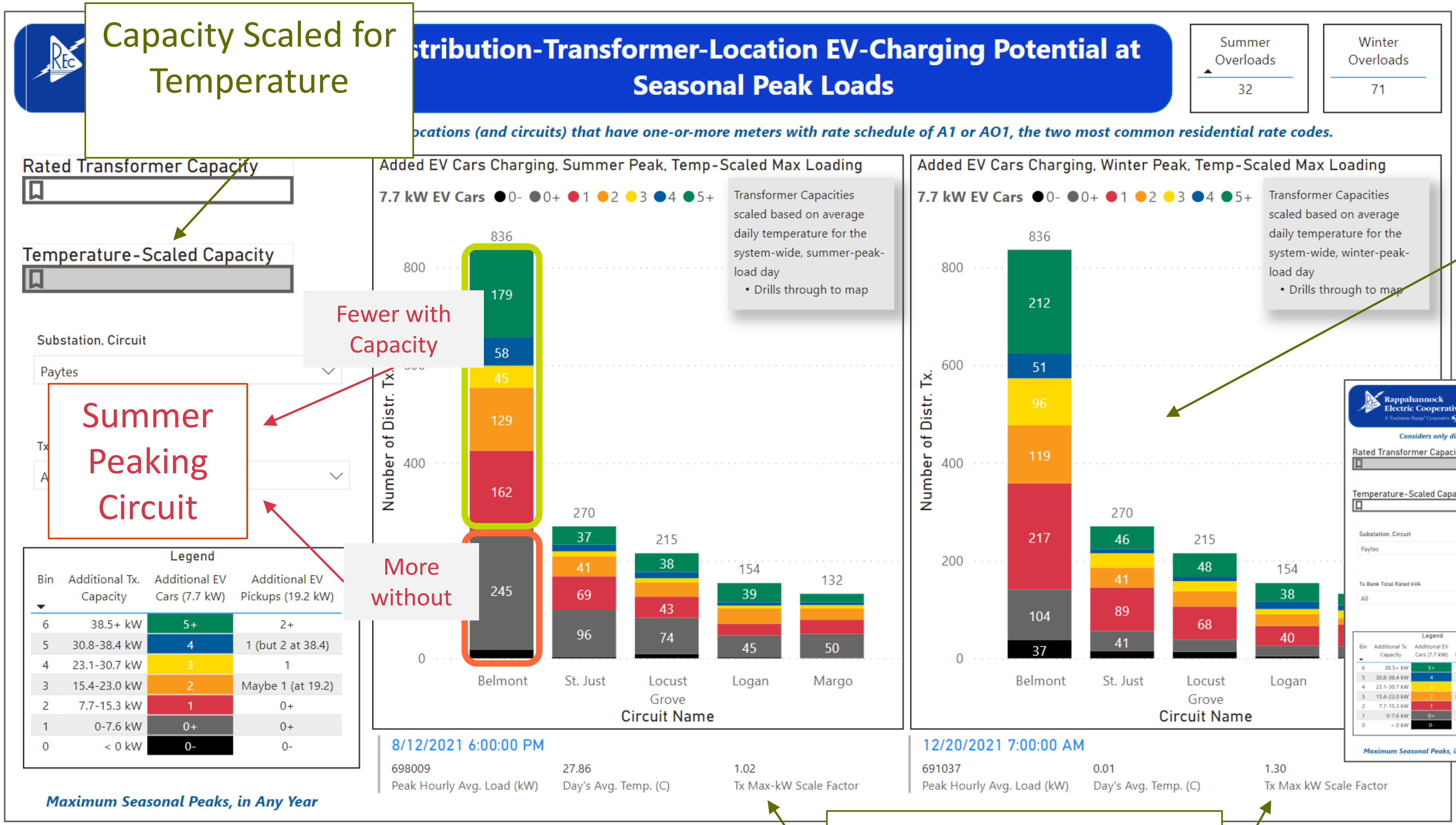
Estimating a Transformer's EV-Charging Capacity



General Method

1. Consider those transformers with residential meters (A1 or AO1)
2. At both summer peak and winter peak, determine the number of EV cars that could charge using a 7.7 kW charger
3. Group the transformers into those that have capacity for
   - Five or more additional EV cars charging
   - Four additional EV cars charging
   - Three additional EV cars charging
   - Two additional EV cars charging
   - One additional EV car charging
   - No additional EV cars charging
   - Overloaded with no additional EV cars charging
4. For most distribution transformers
   - Winter peak is higher than summer peak
   - There is less charging capacity at winter peak
5. We separately consider each transformer's winter and summer peak
   - Each transformer contributes to both bars
6. We examine each transformer both at its "nameplate" rated capacity and at a temperature-scaled capacity

EV-Charging at Seasonal Peaks – Scaled for Temperature



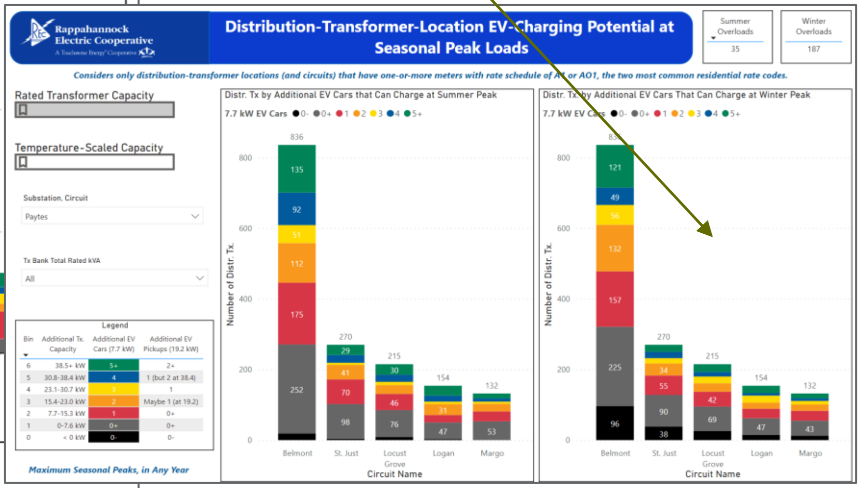
Capacity Scaled for Temperature

Fewer with Capacity

Summer Peaking Circuit

More without

Transformers have greater capacity than nameplate implies



Capacity increases by ~1% per degree below 30C

EV-Charging at Various Percentile Loads

Relies on rated capacities

Distribution-Transformer EV-Charging Potential at Rated Capacity and Various Percentile-Loads

A Touchstone Energy® Cooperative

Transformer Counts

Circuit	Distr Tx
REC Office	192
Rt 301	102
Total	**294**

Uses Transformer Rated Capacities - Not Scaled for Ambient Temperatures

Substation, Circuit

A P Hill

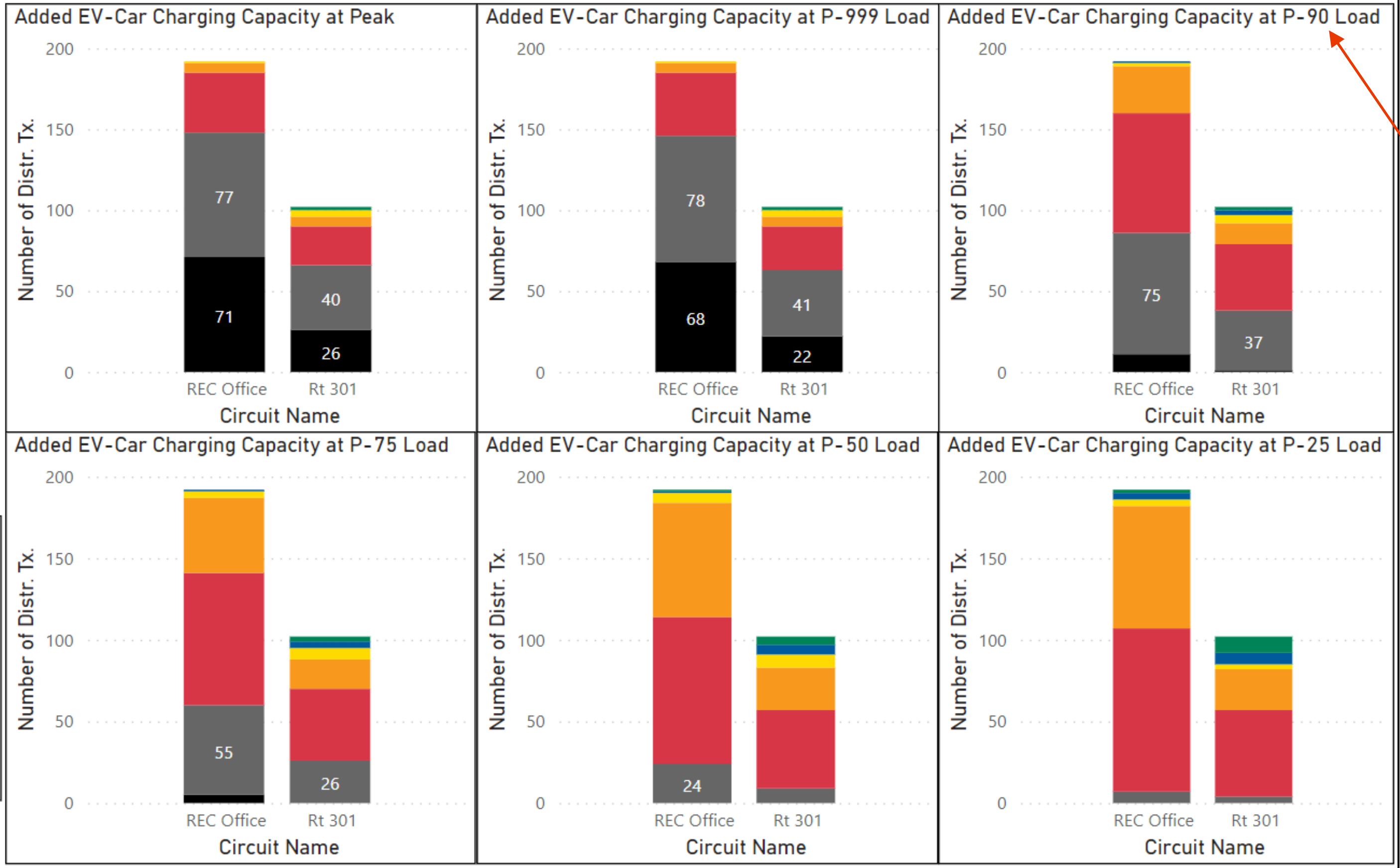
Tx Rated kVA (converts to kW using 95% PF)

All

- ***Annual Loads, Previous 12 Months - Not Seasonal***
- ***Considers only distribution transformers (and circuits) that have one-or-more meters with rate schedule of A1 or AO1, the two most common residential rate codes.***
- ***Some Distr. Tx Lack Capacity at Both Summer and Winter Peaks***

Legend

Bin	Additional Tx. Capacity	Additional EV Cars (7.7 kW)	Additional EV Pickups (19.2 kW)
6	38.5+ kW	5+	2+
5	30.8-38.4 kW	4	1 (but 2 at 38.4)
4	23.1-30.7 kW	3	1
3	15.4-23.0 kW	2	Maybe 1 (at 19.2)
2	7.7-15.3 kW	1	0+
1	0-7.6 kW	0+	0+
0	< 0 kW	0-	0-



90% of the 8760 annual hourly loads fall below the P-90 (90^{th} percentile) load

Mapping EV-Charging at Seasonal Peaks

Rappahannock Electric Cooperative
A Touchstone Energy® Cooperative

Distribution-Transformer EV-Charging Potential at Seasonal Peak Load

Substation_Name, Circuit: A P Hill

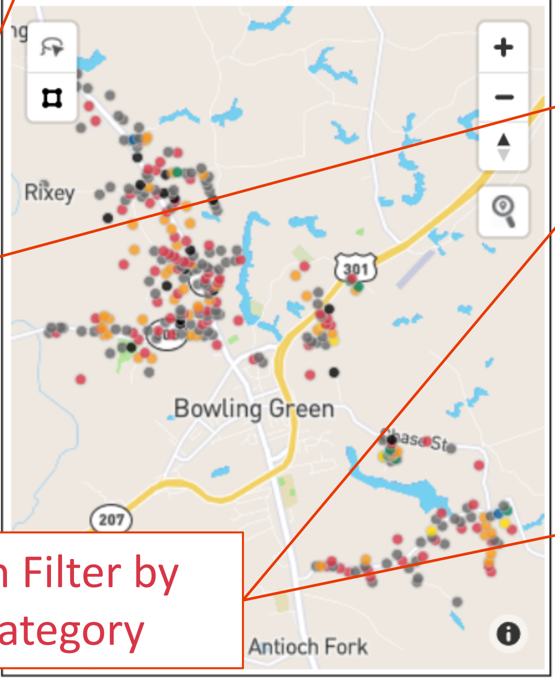
Tx Rated kVA (converts to kW using 95% PF): All

Considers only distribution transformers (and circuits) that have one-or-more meters with rate schedule of A1 or AO1, the two most common residential rate codes.

Summer (Adjusted for Temperature)

Transformer - Company #	Added EV Cars	Rated kVA
35609	5+	50.00
41185	5+	100.00
41389	5+	50.00
41430	5+	50.00
[illegible]	[illegible]	50.00
[illegible]	[illegible]	100.00
[illegible]	[illegible]	50.00
[illegible]	[illegible]	50.00
[illegible]	[illegible]	37.50
[illegible]	[illegible]	37.50
[illegible]	[illegible]	37.50
[illegible]	[illegible]	50.00
43269	3	50.00
47380	3	37.50
73978	3	37.50
100637	2	37.50
101497	2	[illegible]
104187	2	[illegible]
104206	2	[illegible]
104223	2	[illegible]
105288	2	25.00
12216	2	25.00

Temperature-Scaled, Summer-Peak Capacities



Summer Legend

Bin	Additional EV Cars (7.7 kW)
6	5+
5	4
4	3
3	2
2	1
1	0+
0	0-

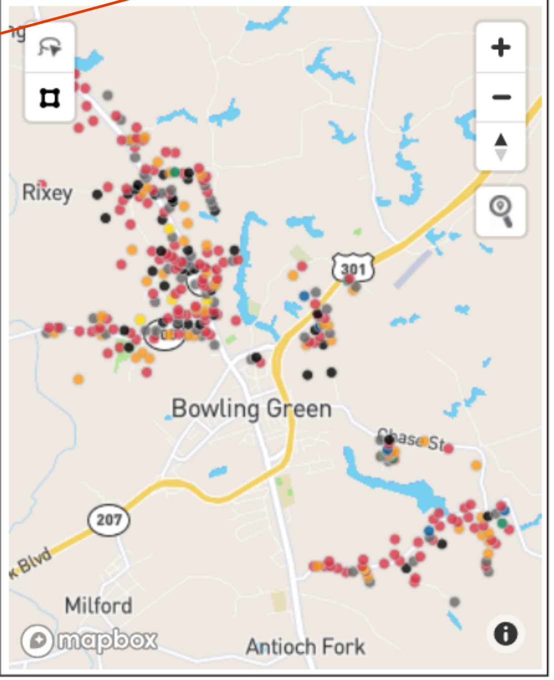
17 | 129 | 85 | 48 | 294

Transformer Capacities Adjusted for Temperature

Can Filter by Category

Winter (Adjusted for Temperature)

Temperature-Scaled Winter-Peak Capacities



Winter Legend

Bin	Additional EV Cars (7.7 kW)
6	5+
5	4
4	3
3	2
2	1
1	0+
0	0-

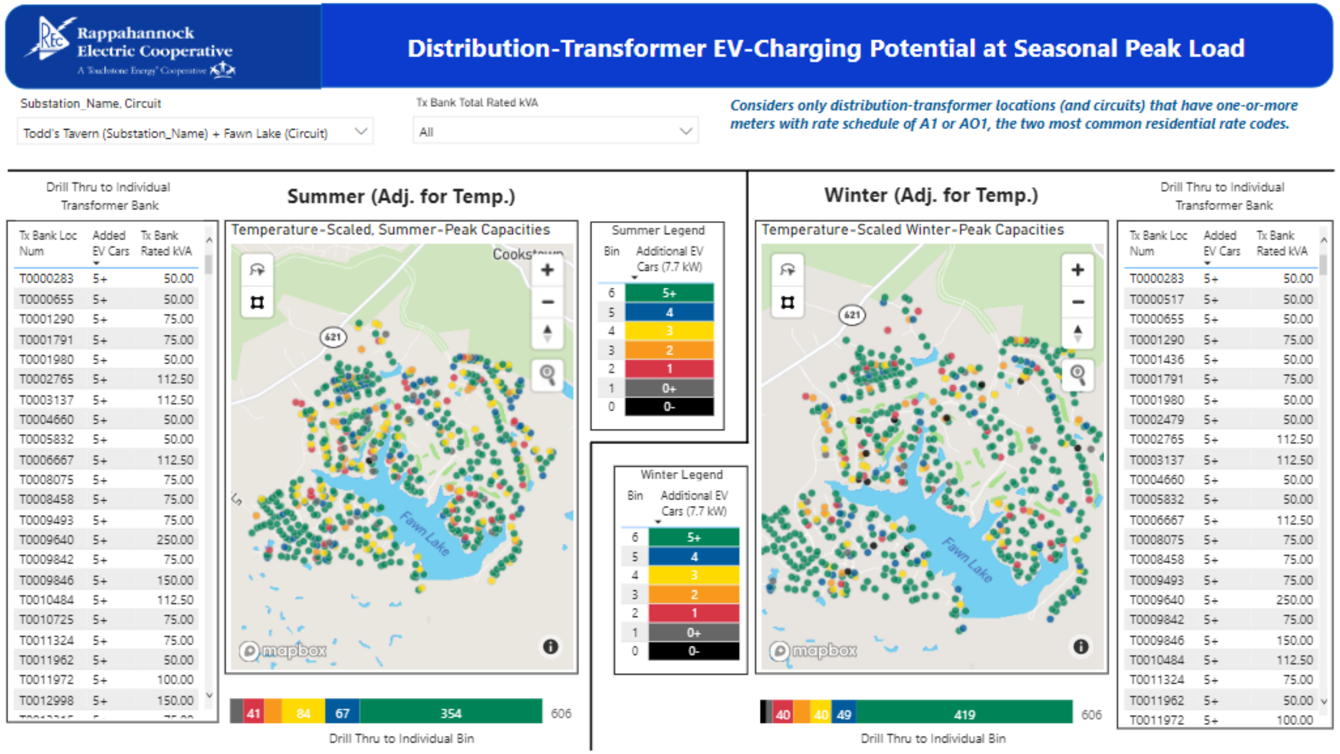
40 | 51 | 136 | 50 | 294

Transformer - Company #	Added EV Cars	Rated kVA
41185	5+	100.00
41389	5+	50.00
41430	5+	50.00
44731	5+	100.00
62220	5+	50.00
73978	5+	37.50
19635	4	37.50
35609	4	50.00
36790	4	37.50
47380	4	37.50
61194	4	50.00
104223	3	25.00
35271	3	37.50
38713	3	37.50
41492	3	25.00
73522	3	25.00
79427	3	25.00
100966	2	25.00
101497	2	50.00
103224	2	25.00
103918	2	25.00
104187	2	25.00
104206	2	25.00

Use Case: High Adoption with Stable Distribution Load but Transmission Concerns

Scenario:

- Subdivision with high median income and several early majority adopters.
- Over 60% of transformers can handle 5+ level 2 chargers in winter peak
- However, due to our line loss study in 2021, we know the median losses are 10.77% with an upper band of 18%
- Recommendation to evaluate and reconfigure long stretch of line that feeds subdivision in next work plan.



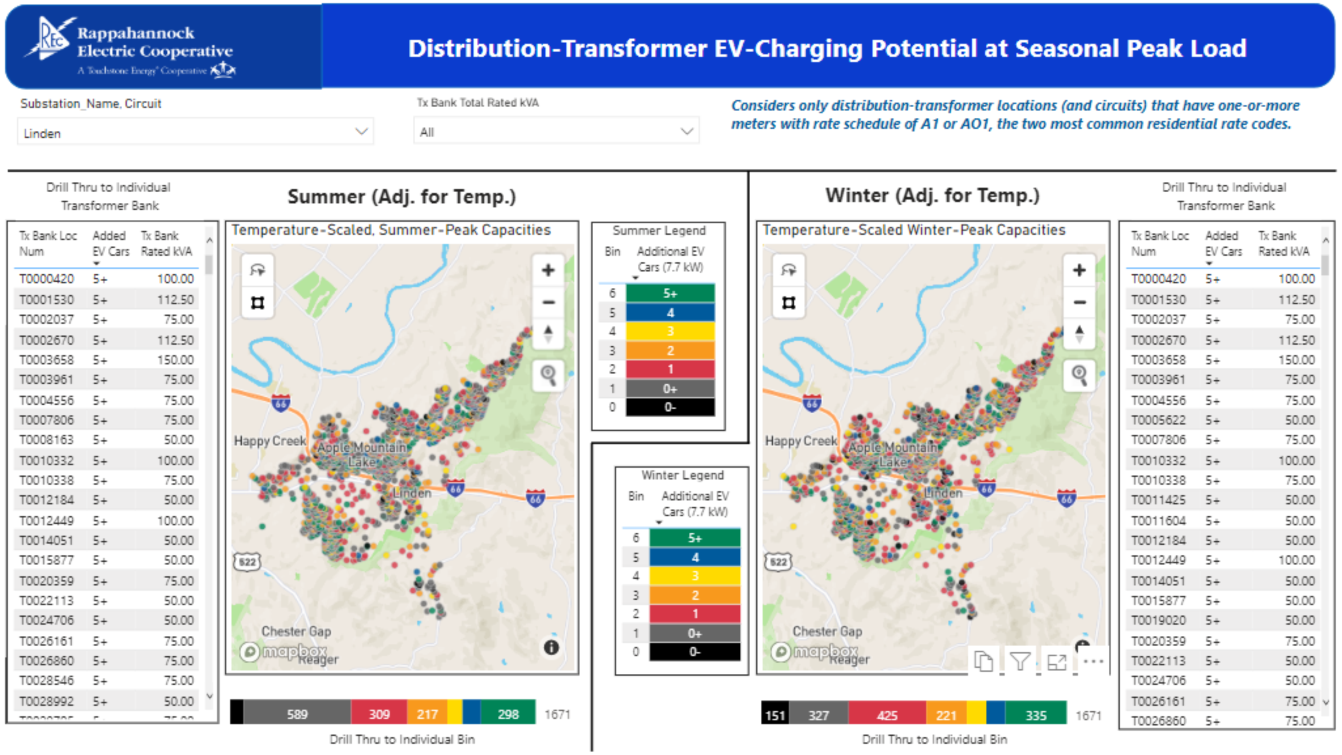
Circuit Kw Losses by Scenario

Ckt	0	1	2	3	4	5	6	7	8	9	10
36100	3.19%	4.74%	6.25%	7.71%	9.20%	10.77%	12.19%	13.65%	15.28%	16.66%	18.05%

Use Case: Stable Transmission Load, but Distribution Concerns

Scenario:

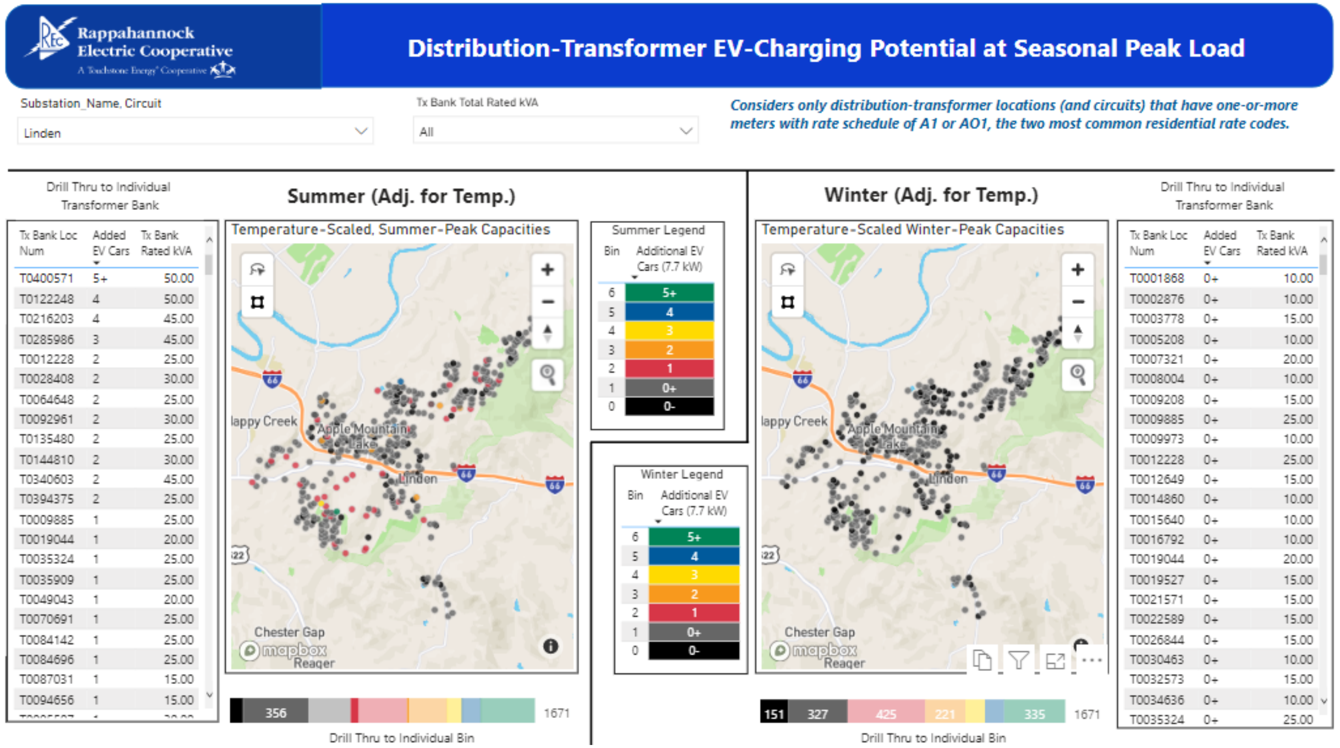
- Subdivision with mid adoption rate
- 28.6% of distribution transformers can not take on one level 2 charger in this location based on temperature scaled capacity
- While transmission peaks are ok, significant TX upgrades are needed in the work plan.



Use Case: Stable Transmission Load, but Distribution Concerns

Scenario:

- Subdivision with mid adoption rate
- 28.6% of distribution transformers can not take on one level 2 charger in this location based on temperature scaled capacity
- While transmission peaks are ok, significant TX upgrades are needed in the work plan.



THANKS