

# Climate Action, Sustainability, and Energy Committee Meeting Minutes

October 28, 2024, 2:00pm

Zoom: <https://virginiatech.zoom.us/j/833381805540>

**Present:** Teresa Sweeny, Nathan King, Ava Garrity, Carrie Cox, Autumn Timpano, Diane Bonsall, Wesley Gwaltney, Leslie Stevens, Matthew Stolte, Zoe Caran, Emily Williams, Liza Morris, Cassidy Blackmore for Dwyn Taylor, Andrew Dolbin-MacNab, Irene Leech, Paul Ely, Felicity Bilow, Nam Ngyuyen, Paul Winistorfer, Allison Tobar, Ian Dunbar for Kendra Paisley, Shushant Dahal, Yohan Sequeira, Pat Donovan, Simon Allen, Annie Lawrence, Julie McClafferty, Josh Clemmons

**Absent:** Zhuo Fu, Catherine Shewchuk, Mae Hey

**Guests:** Kristina Cook, Mark Witt, Wesley Gibson, Anthony Watson, Brenda van Gelder, Sean McGinnis, Erin Poff, Simona Fried, Stephen Durfee, Kathleen Smith, Chloe Hurren, Nick Quint, Sheree Andrews, Karen Martens, Charul Agrawal, Brian Booth, Meghan Marsh, Adia Long, Kelly Scarff, Ronald Myers, Ralph Hall, Gillian Eastwood, Seyi Dasho, Zach Wiess

Nathan King called the meeting to order at 2:00 pm. A quorum was present.

## 1. Adoption of Agenda

A motion was made and seconded to adopt the agenda. The motion carried.

## 2. Announcements

Subcommittees:

There are no November or December CASEC meetings, but the 10 subcommittees will be convening in October and November. Conveners for subcommittees must submit their reports by December 9 and those reports will be sent out to CASEC email group by December 12.

Green RFP:

Submission period is open until November 15.

Freezer Challenge:

Active from January 1, 2025, to July 1, 2025. Anyone who has a lab with cold storage is encouraged to participate.

Dining Fall Harvest Festival:

10/29/24 on Dietrick field. Office of Sustainability and many others tabling. Free food samples.

## 3. Membership Updates

Nathan welcomed GPSS reps Felicity Bilow and Alison Tobar, USS reps Ava Garrity and Zoe Coran, student representatives from environmentally focused student organizations Catherine Shewchuk and Shushant Dahal, and frontline community member representative Yohan Sequeira.

#### **4. Presentation**

Brian Booth (Town of Blacksburg Director of Transit) presented on transit efforts on Virginia Tech's campus and in town, including the new Transit Center.

Matt Stolte (Director of Engineering Services) presented on the Virginia Tech Utilities Master Plan overview and updates.

Steve Durfee (Assistant Director CASE and Campus Energy) presented on energy savings performance contracting.

#### **5. Open Discussion and Announcements**

**Kristina:** There have been questions already answered in the chat and a couple more already. One for Brian, on future plans to extend transit routes out to hard to access without car. No specific plans or timeline, but he says a little bit more about future expansions in the chat.

**Kristina:** There's a question for Matt or anyone else involved that can answer this. Is the Utility Master Plan 2047 compatible with 2050 fossil fuel free campus?

**Matt:** So, I'll answer that. We're at 85% completion of the project. The first 85% is really to understand our utility demands and industry standards to be as efficient with the providing for the level of services that have been identified in the Utility Master Plan. That last 15%, I would say as we close out, will focus on, again underneath our sustainability strategy, it's making it affordable, it's making it meet the vision, but it's also the environmental side, and that will be identified as we close out the report.

**Kristina:** Thank you, Matt., If anyone else has questions, feel free to put them in the chat or raise your hand or unmute. If you think of questions after this meeting, feel free to email Nathan or me or [sustainability@vt.edu](mailto:sustainability@vt.edu).

**Nathan:** Alright, well thanks everyone and again, quick reminder, no more CASE Committee meetings this semester or this year, but we will be back January 27, 2025. And just a reminder to all of our subcommittees, do continue working and we'll be asking for our subcommittee reports in December, so again thanks to everyone participating on our subcommittees working on all those Climate Action Commitment related goals. Again, if anyone that's new wants to sign up for a subcommittee, we're always happy to get you connected with the subcommittee of your choice. Thanks, we'll see you all January 27<sup>th</sup> at 2 pm.

#### **6. Adjournment**

There being no further business, the meeting adjourned at 2:57 pm.





Climate Action, Sustainability, and Energy Committee

**October 28th, 2024 – 2:00 PM**







# Please Use Poll Everywhere to Sign in for Attendance

All attendees- members, proxies, and guests **affiliated with VT** should sign in

## Participating on Your Phone or Tablet

### Using a QR to Participate on Poll Everywhere

1. Open camera app on your phone
2. Place QR code in frame but DO NOT take a photo
3. Focus shot until yellow pollev.com indicator appears



4. Tap QR code on screen to open Poll Everywhere

[PollEv.com/kathleensmith949](https://PollEv.com/kathleensmith949)

### To participate on your computer:

1. Open web browser and enter web address provided to go to Poll Everywhere
2. Enter your VT email in the text box and select “next”
3. Select “Log in with Virginia Tech University Governance”
4. Sign in with VT SSO and complete two-factor authentication
5. Select “Join Presentation”





# Agenda

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- Welcome, Opening Remarks, and Membership Updates
- Approval of Proposed Agenda (Poll Everywhere)
- September Meeting Minutes: Electronic Vote Results
- Announcements
- Business
  - The New Transit Center
  - VT Utility Master Plan Overview and Update
  - Energy Savings Performance Contracting Overview and Update
- Open Discussion



A scenic view of a lake surrounded by lush green trees, with a white rectangular box in the center containing the word "Announcements" in blue text.

# Announcements



# Subcommittee Fall Semester Reports

- There are no November or December CASE Committee meetings but the 10 subcommittees are convening this month and next month
- Reports to be submitted by conveners by December 9<sup>th</sup>
- Reports to be sent out to the CASE Committee email group by December 12<sup>th</sup>





# The 2024-25 Green RFP submission period is open!

Submission Deadline to the Office of Sustainability is November 15th



Students and recognized student organizations are given the opportunity each year to submit a proposal for a sustainable idea that they would like to see implemented on the university's Blacksburg campus. This [memorandum](#) gives a complete overview of the background information, guidelines, timeline, and review process for students planning to submit an RFP for consideration.



# freezer challenge

JANUARY 1ST, 2025 - JULY 1ST, 2025

## WHAT?

- Friendly competition between labs
- Involves completing a set of tasks to make labs more sustainable
- Any lab with cold storage is eligible for participation



# WHY?



- Low time commitment (around 1 hr/week)
- Increased sustainability across campus
- Increased practice of lab safety

Interest form to  
get involved!



Official sign-ups  
in November!



COMING SOON!

VIRGINIA TECH DINING SERVICES NEWS ON

**Sustainability**



A PARTNERSHIP WITH VIRGINIA TECH SUSTAINABILITY & OTHER SUSTAINABLE DEPARTMENTS ON CAMPUS

**FALL HARVEST FESTIVAL**



**OCTOBER 29 NOON-3 P.M.**



# Second Annual Fall Harvest Festival



## Date and Time

Tuesday, October 29 2024 at 12:00 PM EDT to  
Tuesday, October 29 2024 at 3:00 PM EDT

Add To [Google Calendar](#) | [iCal/Outlook](#)



## Location

D2 Lawn

Join us at the Fall Harvest Festival on October 29th and help celebrate the season! Experience the food system from every stage - from farm, to table, to the waste bin. We've put a special emphasis on local and sustainable options for this event; come explore local and campus foods, sustainable majors, games, and more!

Sample seasonal Homefield Farm produce straight from our amazing Dining Services' chefs! Paint a campus-grown pumpkin with your friends! Meet with a College of Ag and Life Sciences team member! Grab a snack from the VT Meat Lab! Enjoy music, games, and so much more!

Time and details of events are subject to change – check back before event to confirm.

If you are an individual with a disability and desire an accommodation, please contact Emily Williams at [wemily93@exchange.vt.edu](mailto:wemily93@exchange.vt.edu) during regular business hours at least 10 business days prior to the event.



A scenic view of a lake surrounded by lush green trees, with a white rectangular box overlaid in the center containing the text "Transit Center". The background shows a calm body of water reflecting the sky, framed by dense green foliage and tree branches. The text is centered within the white box in a blue, sans-serif font.

# Transit Center





# Blacksburg Transit

## Moving Toward a Sustainable Future

October 28, 2024

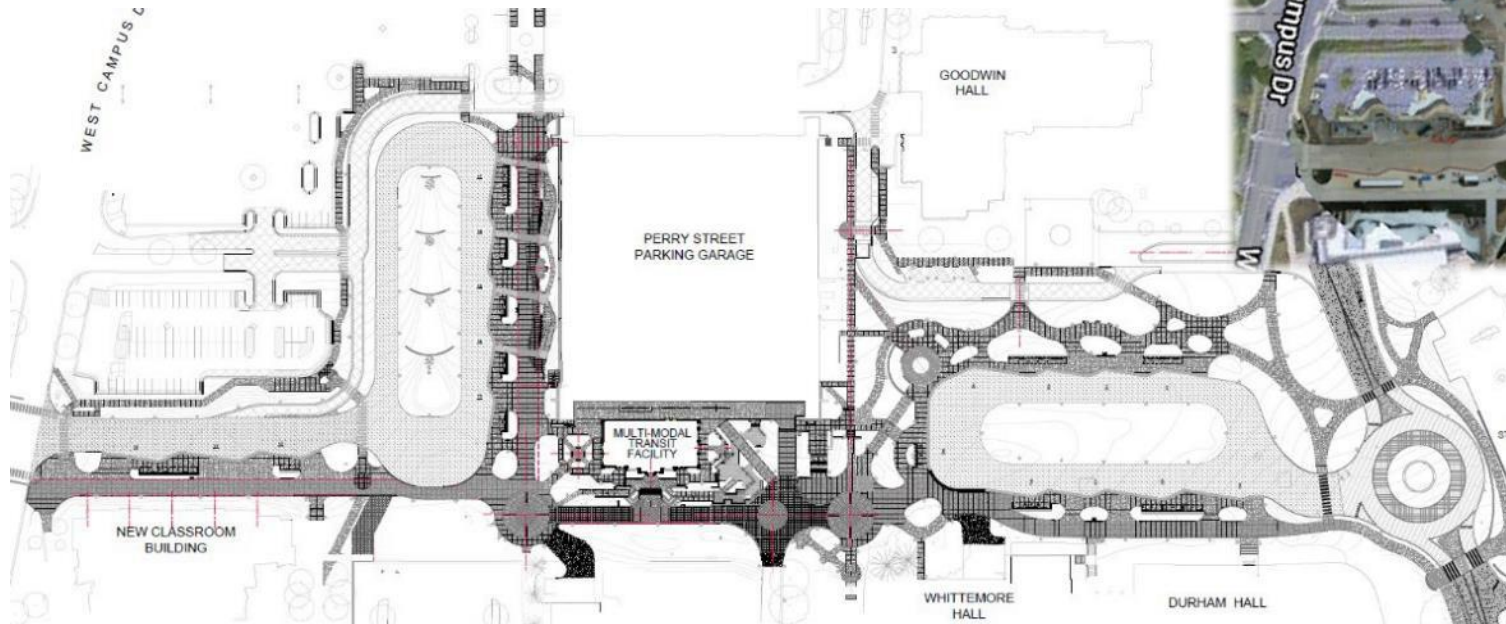






# Transit Center

*(formerly Multi-Modal Transit Facility)*





# Transit Center Features

- Transit Center building
- Two bus loops
  - 17 bus bays
- Electric vehicle charging  
(Perry Street Parking Garage)
- Future expansion planned  
for electric bus charging







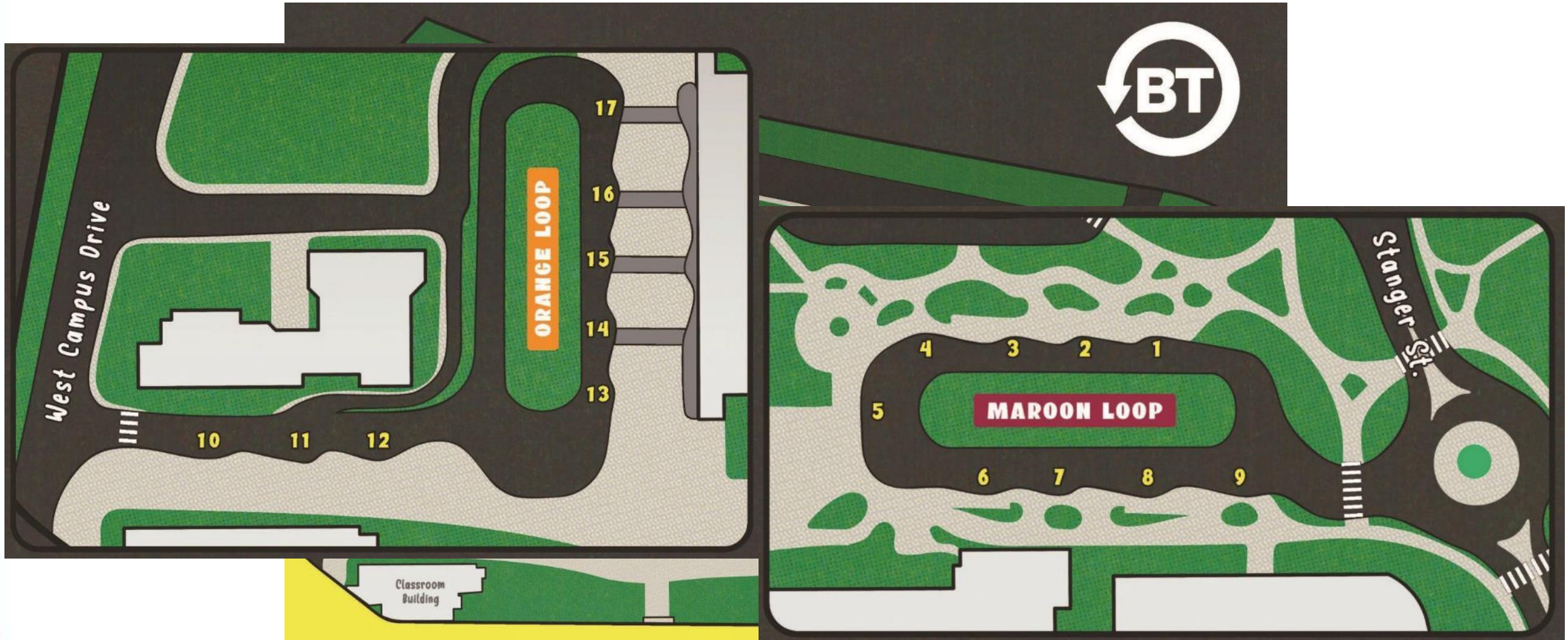
# Transit Center Layout







# Transit Center Layout





# Transit Center Building

- Passenger waiting area
- Restrooms
- Hokie Bike Hub
- Offices & staff breakroom
  - Blacksburg Transit
  - Transportation Services
- Striving for LEED Gold







# Transit Center Service Changes

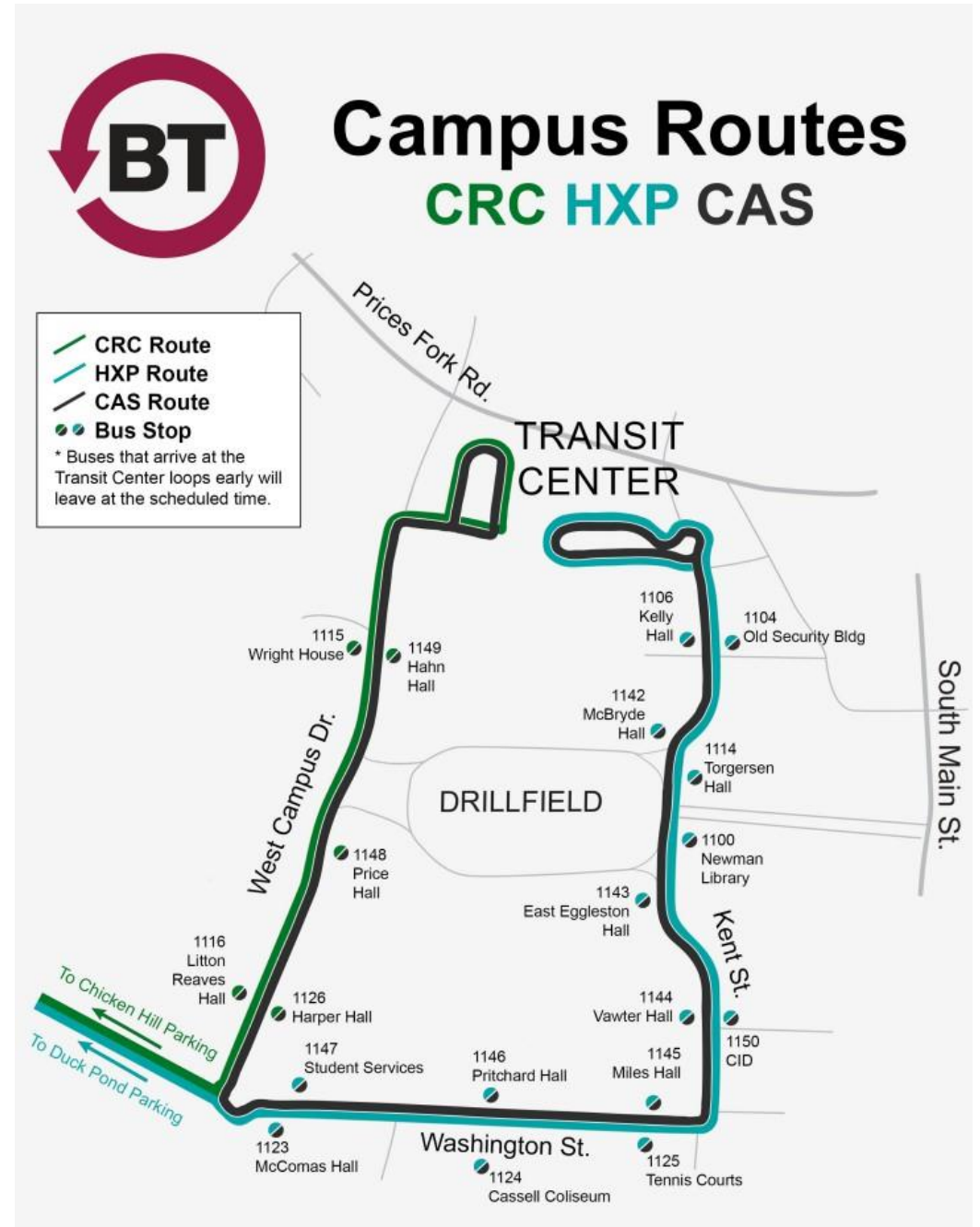
- Off Campus: Transit Center is the destination on campus
- Central hub for all transit; including regional services
- Increased frequencies and efficiencies on some routes
- Introduction of dedicated campus routes





# Campus Routes

- Campus Shuttle (CAS)
  - Hokie Express (HXP)
  - CRC Shuttle (CRC)
- Connection of academic & residential regions of campus
- Reduce bus/pedestrian conflicts on central campus
- Increased frequencies on periphery of central campus

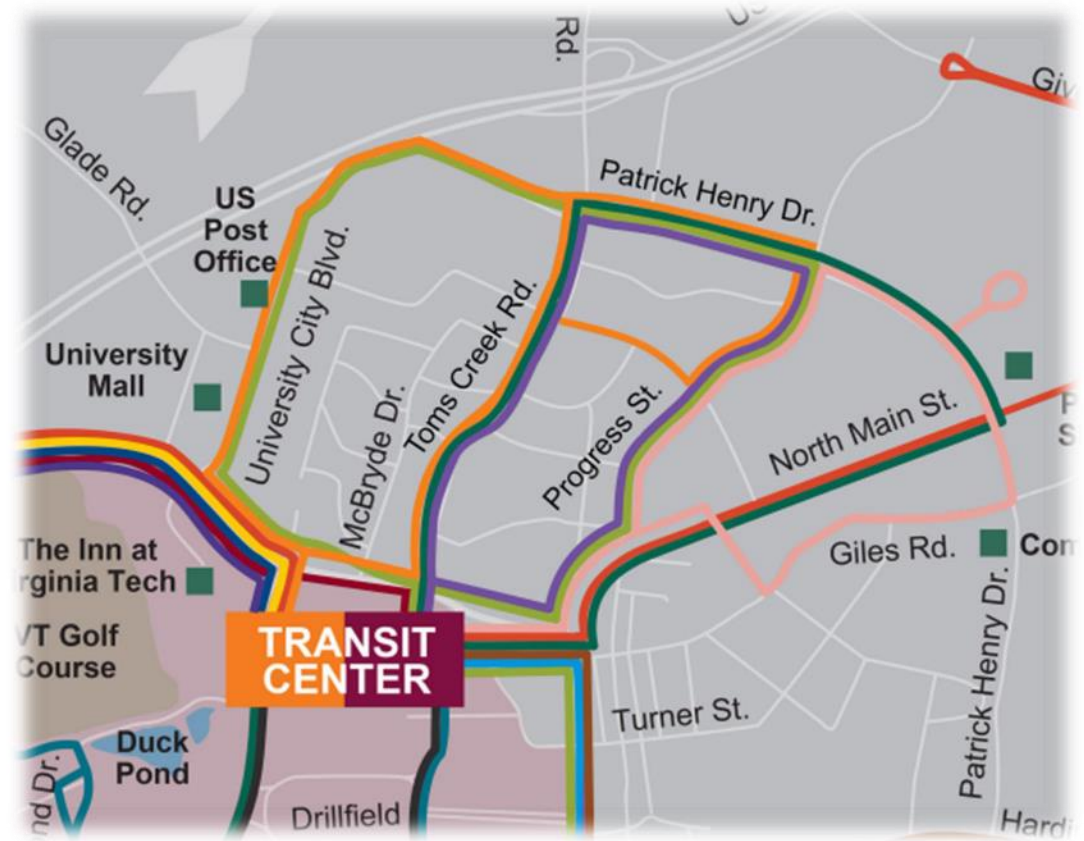






# Efficiency Improvements

- Toms Creek (TCR), Progress (PRG), Patrick Henry B (PHB)
- Increased Frequency
  - 15 minute > 12 minute
- 25% increase in service without increasing resources

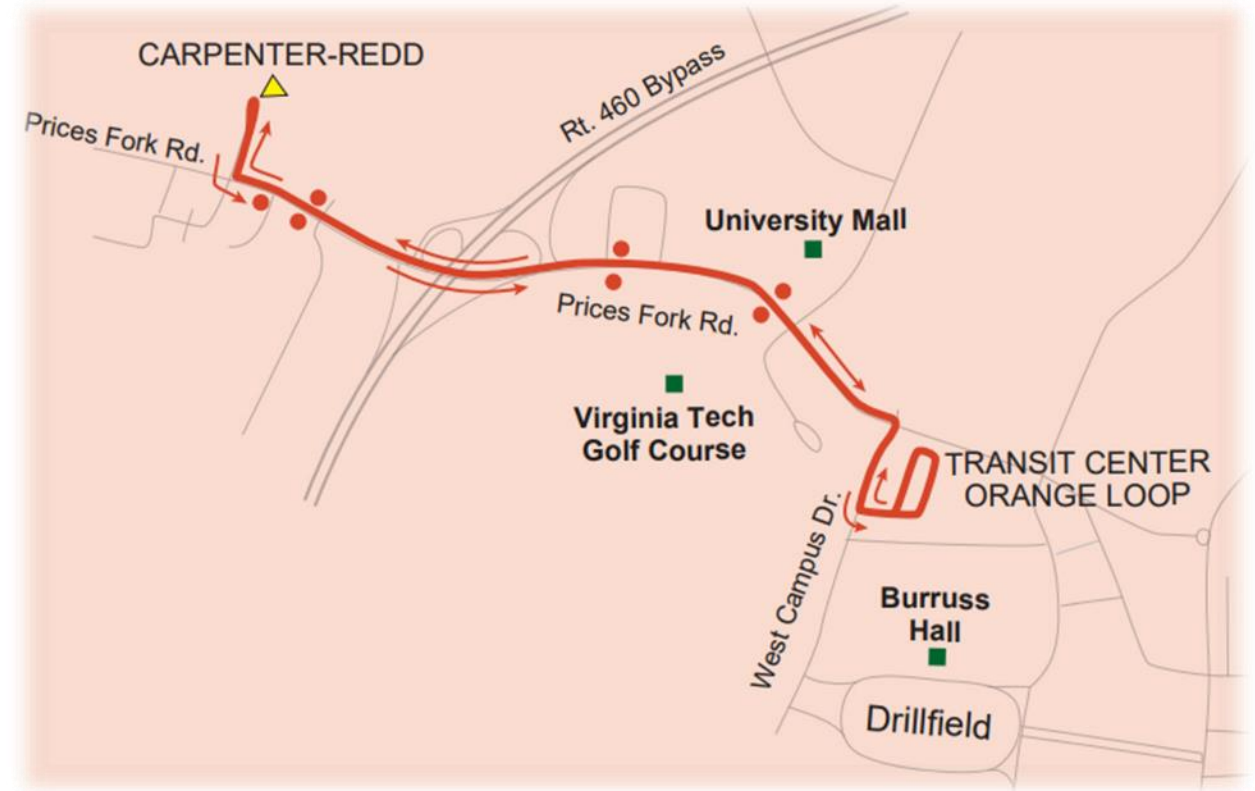


\*First week of classes ridership data



# Efficiency Improvements

- Carpenter Blvd. (CRB)
- Increased Frequency
  - 30 minute > 20 minute
- 50% increase in service without increasing resources
- 94% increase in ridership



\*First week of classes ridership data





# Overall Efficiency Improvements

- 25% increase in ridership
- 14% decrease in full bus/pass-by occurrences
- 14% of ridership attributed to Campus Shuttle (CAS)
- Grouping of routes with similar destinations

\*First week of classes ridership data



# The Buses of the Future

- Historically diesel
- 2006 – Experiment with bio-diesel
- 2010 – Added 9 hybrid diesel/electric buses
- 2014 – Diesel more efficient than hybrids
- 2020 – First 5 battery electric buses

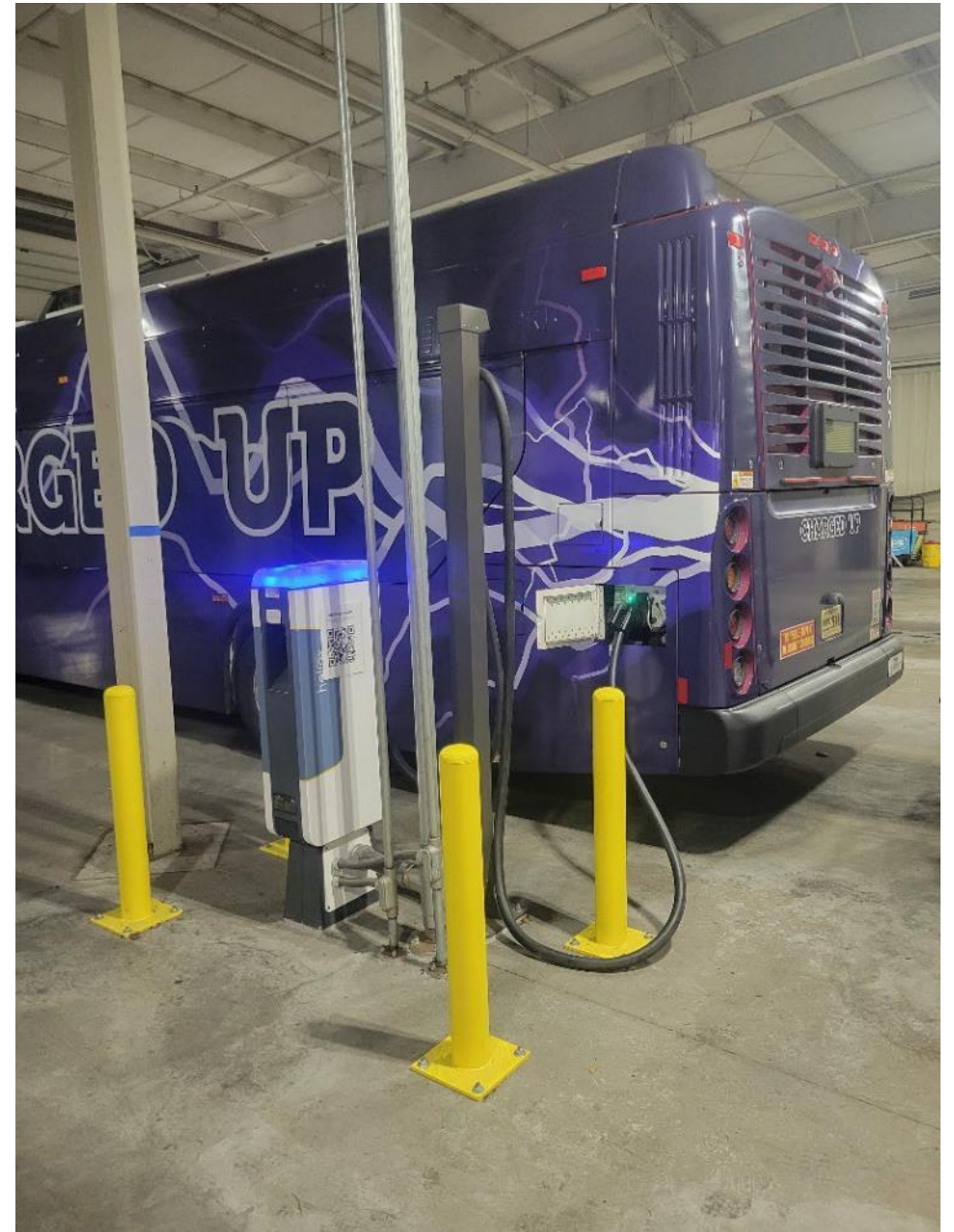






# Electric Buses

- Current fleet of 10
- ~12 hours of service
- Depot charging
- 18 more coming soon
- Fully electric fleet by 2035





# Future of Charging

- On route charging
- Pantograph

IT'S ELECTRIC







# VT Climate Action Commitment

- Goal 9 – Reduce Single-Occupancy Vehicle Commuting to Campus by 20 percent by 2025 and Reduced Transportation Related GHG Emissions by 40 percent by 2030
  - Make transit more convenient than driving
    - Increased frequency
    - Multiple routing options
  - Transition from diesel to electric bus fleet
    - 57% of fleet fully electric by Spring 2026



# Thank you!







# Agenda

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- Welcome, Opening Remarks, and Membership Updates
- Approval of Proposed Agenda (Poll Everywhere)
- September Meeting Minutes: Electronic Vote Results
- Announcements
- Business
  - The New Transit Center
  - **VT Utility Master Plan Overview and Update**
  - Energy Savings Performance Contracting Overview and Update
- Open Discussion





# VT's Utility Master Plan

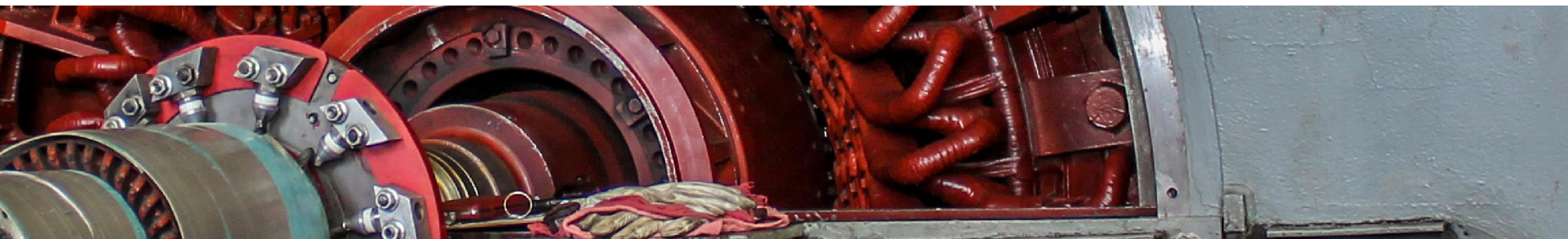




# UTILITIES MASTER PLAN

MATT STOLTE | University Engineer

November 2024





# Utilities Master Planning Process

## Levels of service

Performance

Sustainability

Resilience

## Systems

Condition

Capacity

## Planning horizons

2024

6 year capital outlay plan

2047



2024 – Existing campus



6 Year capital outlay plan



2047 – Vision



# Major Utility Services

## COMPREHENSIVE NETWORK OF UTILITIES



Heating and Cooling	Water, Sewer, and Storm	Electricity	Telecommunication
<ul style="list-style-type: none"> <li>▶ Heating 175,000 MBH</li> <li>▶ 16,500 tons central plant capacity</li> <li>▶ 30 miles of distribution pipes</li> </ul>	<ul style="list-style-type: none"> <li>▶ Potable water 1.0 MGD</li> <li>▶ Domestic hot water 0.5 MGD</li> <li>▶ Sewer collection 1.2 MGD</li> <li>▶ Storm water facilities</li> <li>▶ 100 miles of distribution pipes</li> </ul>	<ul style="list-style-type: none"> <li>▶ Distribute 30 MegaWatts (on campus)</li> <li>▶ Generate 6.25 MegaWatts</li> <li>▶ 96 miles of distribution lines (on campus)</li> </ul>	<ul style="list-style-type: none"> <li>▶ Telecom 35 Gb/sec</li> <li>▶ Core ring 400 Gigabit links</li> <li>▶ Distribution 10/40 Gigabit links</li> <li>▶ 50 miles<sup>3</sup><sub>1</sub> of distribution lines</li> </ul>

## Four Phases of the Utility Master Plan

### Phase 1: Field Investigations

▶ **Completed Summer 2023**

### Phase 2: Existing Conditions Assessment

▶ **Completed Winter 2023**

### Phase 3: Capacity Analysis and Projections

▶ **Completed Spring 2024**

### Phase 4: Utility Master Plan and Programming

▶ **85% Complete**

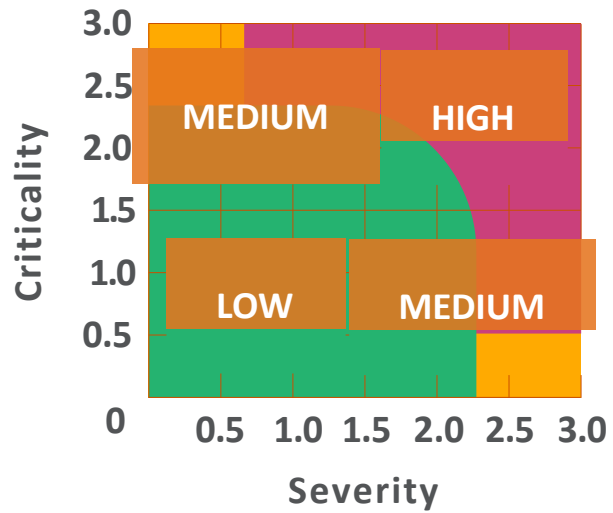
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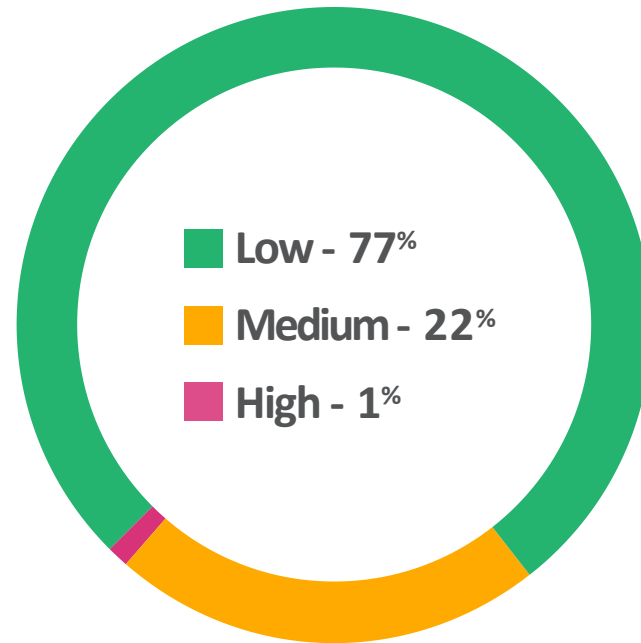
# Condition Assessment of Existing Infrastructure

## RISK, PRIORITY, AND SYSTEMS

### Criticality vs. Severity



### Utility System Condition Ranking

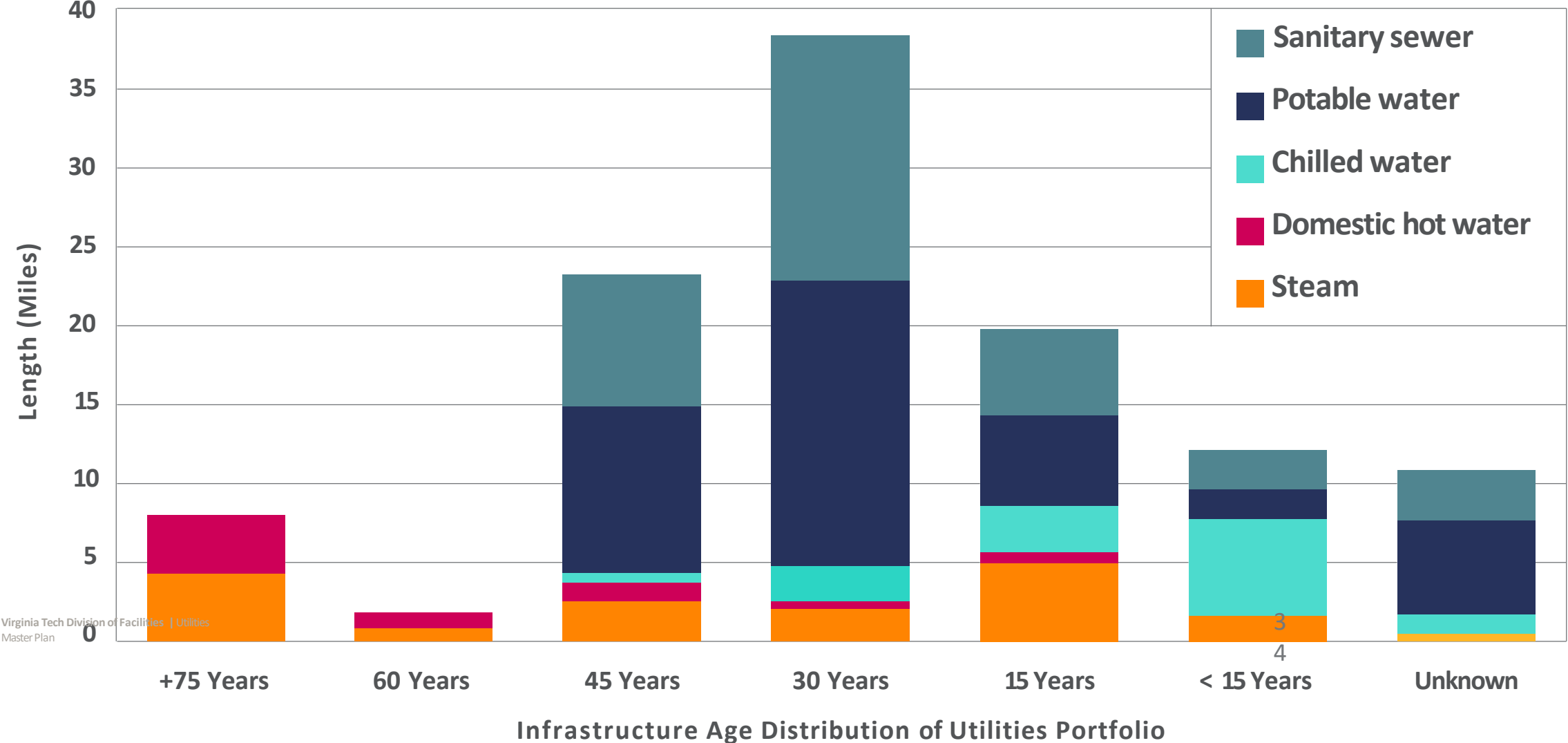


### Renewal Strategy

- Steam distribution
- Hot water distribution
- Chilled water

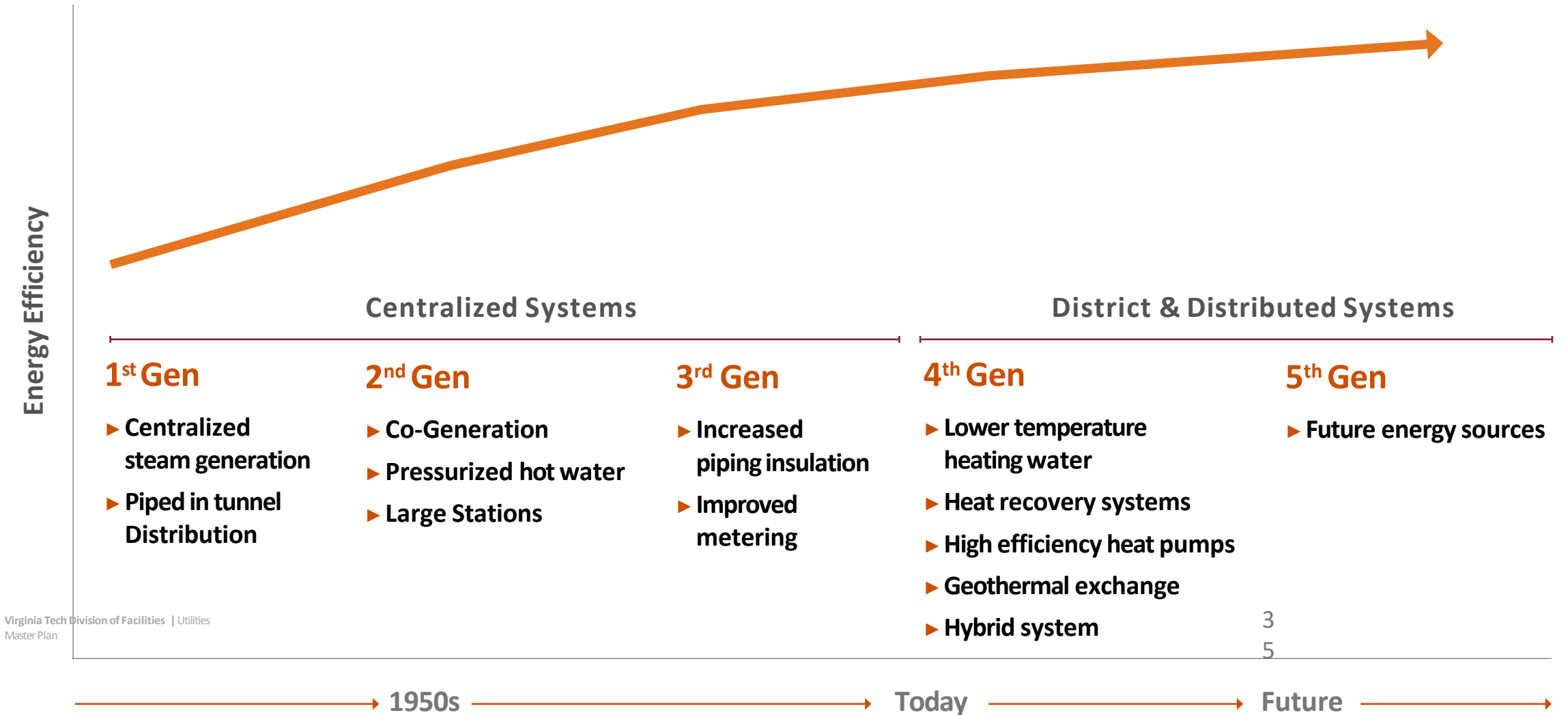
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# Infrastructure Age and Condition



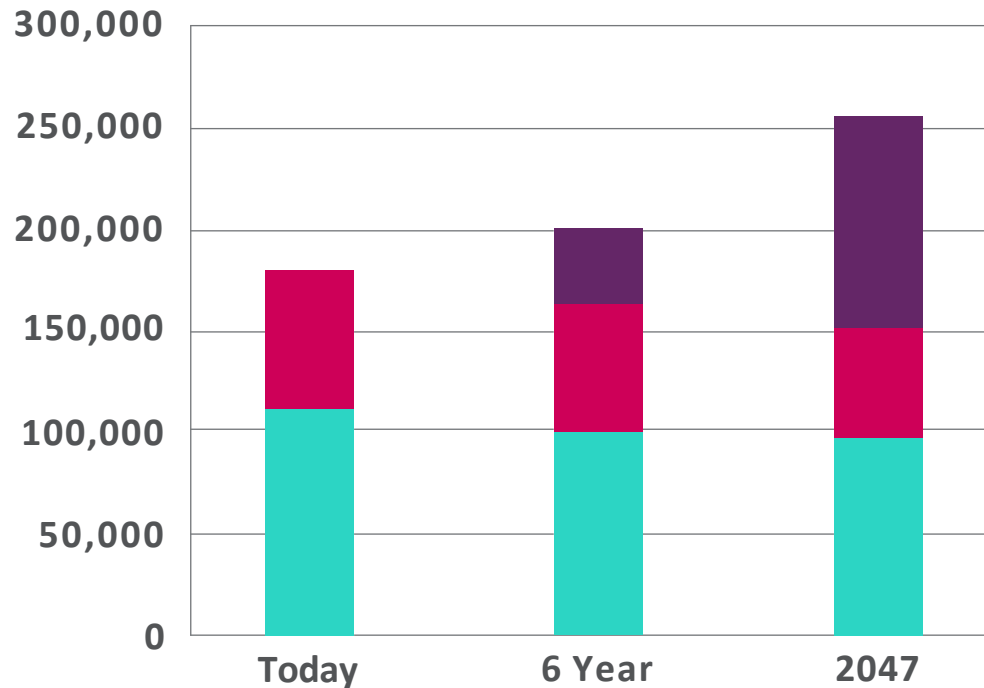


# NextGen Heating Technologies

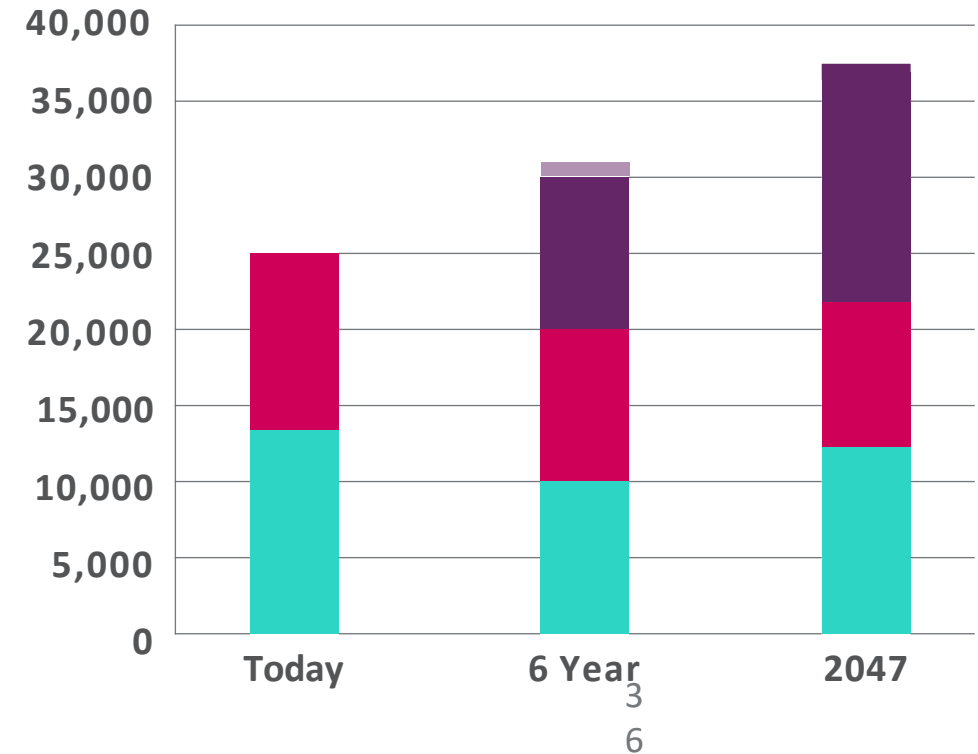


# Transition Toward NextGen Technology

## Heating Demand MBH



## Cooling Demand Tons






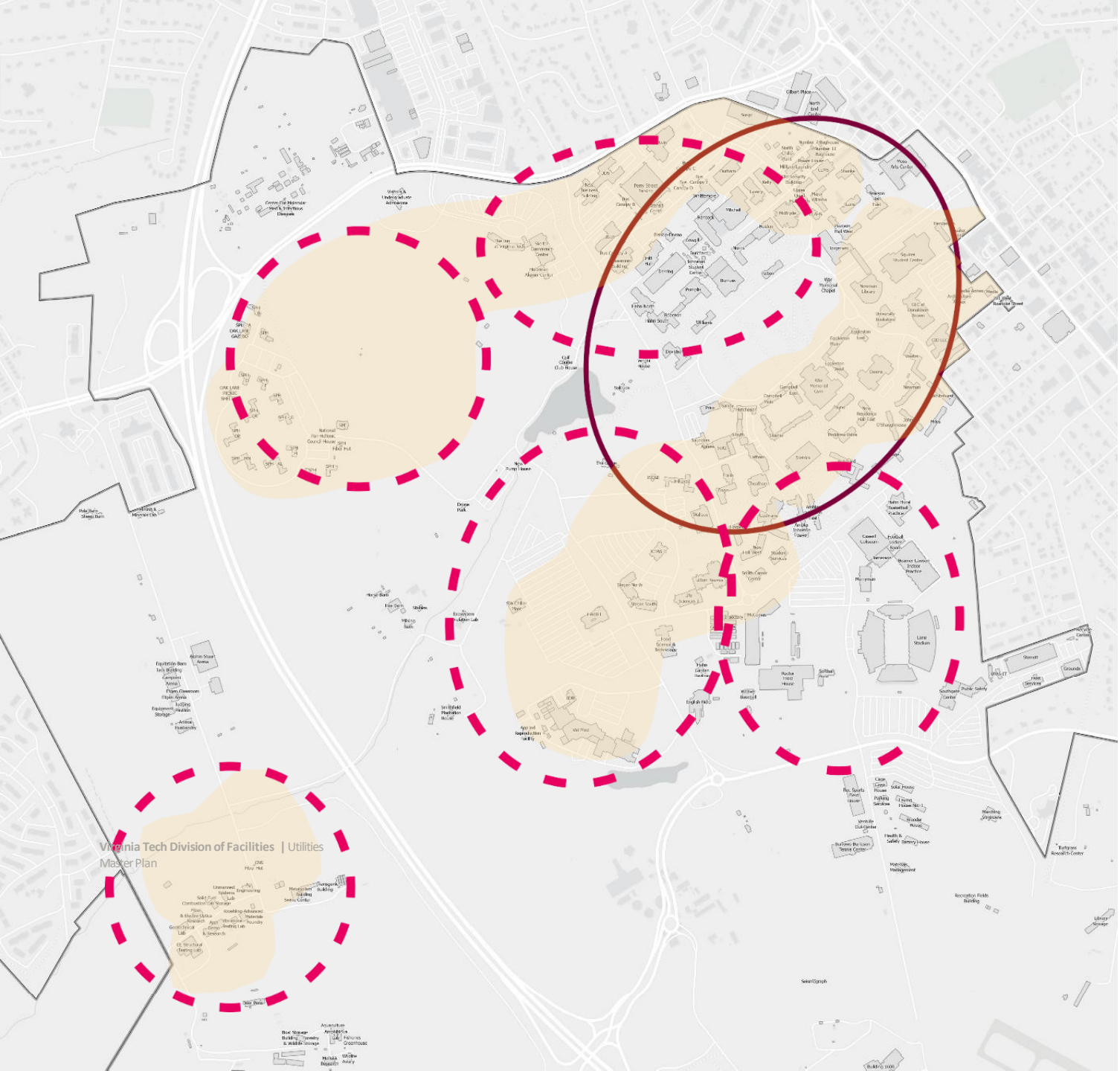
Virginia Tech Division of Facilities | Utilities  
Master Plan

- Central plant
- Stand-alone
- NextGen
- Unconditioned



# UMP Strategic Outlook

-  Central utility services
-  2047 vision
-  NextGen utility services



Virginia Tech Division of Facilities | Utilities Master Plan



# DISCUSSION



# S U P P L E M E N T





## Goals and Objectives of the UMP

1. Stakeholder collaboration
2. Focus on asset management
3. Reduce risks in levels of service
4. Align with existing programs
5. Create a programmatic process





# Schedule



Phases	2023								2024								2025		
	Q1		Q2		Q3		Q4		Q1		Q2		Q3		Q4		Q1		
Phase 1 Kickoff and Data Gathering	1																		
Phase 2 Existing Conditions			2	2		4													
Phase 3 Analysis & Future State Projections			3					5		6	7								
Phase 4 Utilities Master Planning Process												8	9	10	11	12			

**1** Project kickoff meetings

**2** Existing conditions workshops

**3** 2047 Campus Plan and CAC workshop

**4** 30% review meeting

**5** CAC: Decarbonization

**6** CAC: Air emissions

**7** CAC: Measures of success

**8** Project development workshops

**9** Concept vetting workshop

**10** 90% review workshop

**11** 100% draft review meeting

**12** 100% plan presentation



A scenic view of a lake surrounded by lush green trees, with a white text box overlaid in the center. The text is in a blue, sans-serif font.

# Energy Savings Performance Contracting



# Campus Decarbonization Through Energy Efficiency

Virginia Tech Energy Saving Performance Contracting (ESPC)

*Office of Energy Management*

# ESPC Process, Timeline & Scope

- 2/2023 -- VA Energy's streamlined ESPC model RFQ
  - 7/2023 -- Level 1 energy audit performed by 5 firms
- 4/2024 -- ABM Selected
- 5/2024-9/2024 -- ABM/VT performed a Level 2, E&G Investment Grade Audit (IGA)
  - Scope=District energy systems and 50 buildings (~3.7 msqft)
- 9/2024-11/2024 -- ABM/VT preliminary project development period
- 11/2024 -- ABM delivers substantial final IGA with proposed energy efficiency measures (EEMs)
- 11/2024-4/2025 -- VT Internal stakeholder EEM evaluation and collaborative real time project scenario modelling with ABM
- 5/2025 -- Select & present final bundled EEM scenario package
- FY2026 -- Begin project implementation. Completion TBD



# ESPC Potential Outcomes

- ❖ ~\$50m project bundle
  - Showcase Netzero Energy Existing Building – CALL Opportunity
    - Low EUI building through EEMs
    - Geothermal heating & cooling with heat recovery
    - Powered by renewables
    - Battery storage
    - Cutting edge digital energy management control system with AI
  - Improved built environment & indoor environmental quality
    - 10's of thousands of LEDs
    - Upgraded HVAC systems & energy management controls
    - Water efficiency
    - Renewed assets
  - District energy system optimization
    - Chilled water plants and power plant
  - Annual energy cost & GHG avoidances
    - ~\$3-\$5 million, reduced electricity consumption, reduced electricity demand
    - GHG reduction (Qty TBD)

# Open Discussion

- Transit Center
- VT Utility Master Plan
- Energy Savings Performance Contracting

**Next Meeting:**

**January 27<sup>th</sup>, 2025  
2:00 p.m. via Zoom**





14:01:04 From Kathleen Smith to Everyone:

Hi everyone! Here is the link to fill out for attendance:

<https://pollev.com/kathleensmith949>

14:11:58 From Ronald Meyers to Everyone:

So glad to hear of new electric charging station. What kW capacity will the new charging station have?

14:29:39 From Ralph Hall (he/him) to Everyone:

Brian - has BT considered installing solar on the roof of the BT depot to potentially reduce the cost of electricity?

14:30:03 From Gillian Eastwood to Everyone:

Great updates, Brian!

14:30:32 From Nick Quint to Everyone:

Replying to "So glad to hear of n..."

Are you talking about the charging stations in the Perry Street Garage or the pantograph chargers?

14:31:44 From Ronald Meyers to Everyone:

Replying to "So glad to hear of n..."

Charging stations for automobiles in Perry street garage

14:31:58 From Paul Ely to Everyone:

Replying to "So glad to hear of n..."

40 amps tier 2 chargers

14:32:42 From Ronald Meyers to Everyone:

Replying to "So glad to hear of n..."

Sorry to ask - what is the amps to kW conversion ratio? The charging stations all list their charge rates in kW.

14:33:36 From Nick Quint to Everyone:

Replying to "So glad to hear of n..."

It's up to 7.2 kW per the specs

14:33:52 From Brian Booth to Everyone:

Replying to "Brian - has BT consi..."

Solar has been reviewed, however it is not an option due to the majority of charging occurring at night between the hours of 7 pm and 6 am.

14:34:47 From Ronald Meyers to Everyone:

Replying to "So glad to hear of n..."

Thanks! That is better than the 5kW at other campus locations.

14:50:20 From Gill Eastwood to Everyone:

Question for Brian: As to any future plans to extend transit routes out to those 'hard to access without a car' areas, such as Jenelle Rd/Ellett Valley (where plenty of faculty/staff live), or the VT Kentland farm or VT Apiary (right along Prices Fork), where students have to get out to, especially in summer.

Many thanks for the updates and the new Transit center is a fantastic step!

14:52:11 From Sushant Dahal to Everyone:

Is the utility master plan 2047 compatible with 2050 fossil-fuel free campus?

14:55:18 From Brian Booth to Everyone:

Replying to "Question for Brian: ..."

No specific plans or timeline set in stone, but potential areas of future expansion have been identified in our updated Strategic Plan. Some of the areas include areas not currently served within the Town of Blacksburg limits (Glade Road, North Main to 460, etc.), Merrimac area, and Prices Fork corridor.

14:55:52 From Gill Eastwood to Everyone:

Reacted to "No specific plans or..." with 👍

14:58:34 From Josh Clemons (Math Dept) to Everyone:

Thank you