VIRGINIA TECH

Dedicated to its motto, *Ut Prosim* (That I May Serve), Virginia Tech pushes the boundaries of knowledge by taking a hands-on, transdisciplinary approach to preparing scholars to be leaders and problem-solvers.

- Nearly 39,000 students enrolled on and off campus
- 80 percent undergraduate 20 percent graduate
- 110+ undergraduate majors and 120+ master's and doctoral degree programs
- Top 6 percent of universities in the nation for research expenditures

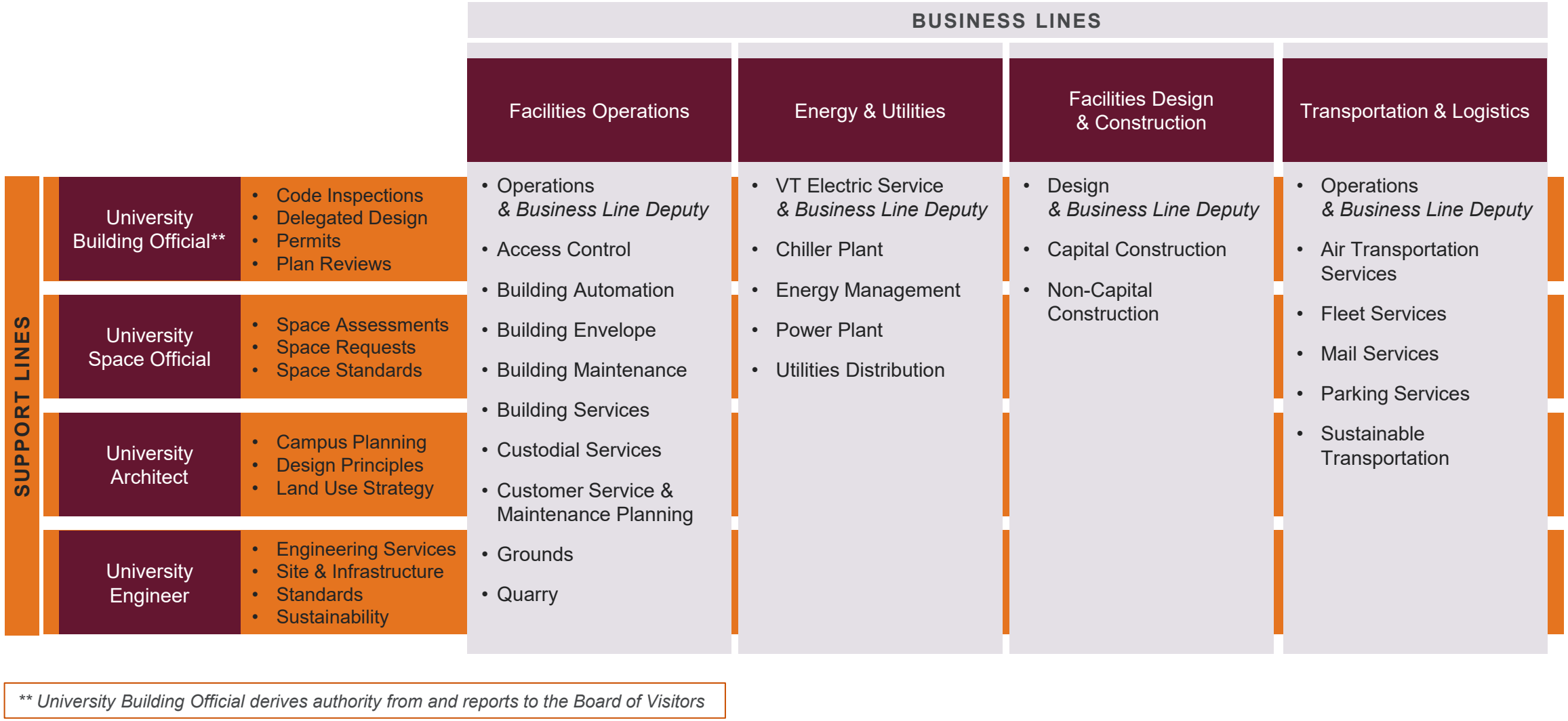
DIVISION OF FACILITIES

Infrastructure, planning, and campus stewardship

500+ skilled professionals support Virginia Tech's physical environment

- Plan, maintain, and improve infrastructure to support university programs and operations
- Ensure enforcement of the Virginia Uniform Statewide Building Code compliance
- Advance accessibility and inclusion across the campus environment
- Lead sustainability and climate action through energy management and environmental stewardship
- Implement the University Master Plan as the physical expression of the university's strategic plan
- Preserve campus character through architectural heritage and aesthetic continuity

DIVISION OF FACILITIES UNITS



*** University Building Official derives authority from and reports to the Board of Visitors*

ENERGY & UTILITIES

Operational Excellence | Asset Management | Energy Sustainability

Power Plant

- One 100,000 lbs/hr boiler
- Three 78,000 lbs/hr boilers
- Two coal boilers (to be retired)
- 334,000 lbs/hr superheated steam capacity
- 110,000 lbs/hr avg. winter hourly steam load
- 65,000 lbs/hr avg. summer hourly steam load
- 6.25 MW turbine generator
- 4.3 MW avg. winter output
- 1.6 MW avg. summer output

Chilled Water Plants

- Two central chiller plants
- 13.5 miles of chilled water loop
- 16,500 tons rated capacity
- 3,000 tons operating reserve capacity
- North plant: five machines (two 3,000 tons and three 1,500 tons)
- SW plant: three machines (one 3,000 tons and two 1,500 tons)
- Three small district chiller plants
- 52 chillers distributed across campus
- CHW service contract

VTES

- Four 12.5 kV substations
- Eight substation transformers, 95 MW capacity (double redundancy)
- 1,283 distribution transformers
- 138 miles of underground cables
- 75 miles of overhead cables
- Meters: 6,343 town / 451 campus
- Annual billed load: 147,000 MWh town / 200,000 MWh campus
- AMI implementation

Mechanical Utilities

- Over 100 miles of distributed infrastructure
- 16 miles of steam tunnels
- 13 miles of chilled water
- 40 miles of storm water sewer
- 39 miles of potable water
- 30 miles of sanitary sewer
- 7 miles of domestic water

Office of Energy Management

- LED lighting conversions
- Building retro-commissioning
- Energy Savings Performance Contracting (ESPC)
- Building automation systems (BAS) upgrades
- Laboratory ventilation optimization
- Occupancy-based HVAC controls
- Building optimizations
- Campus optimizations

VTES

Virginia Tech Electric Service

- 69kV delivery from AEP/APCO
- Four 12.5kV substations
- Eight substation transformers (double redundancy)
- 1,238 distribution transformers
- 138 miles of underground cables
- All time peak – 65MW
- Average daily peak – 45MW

CAMPUS ROOFTOP SOLAR ARRAYS

1.2MW total

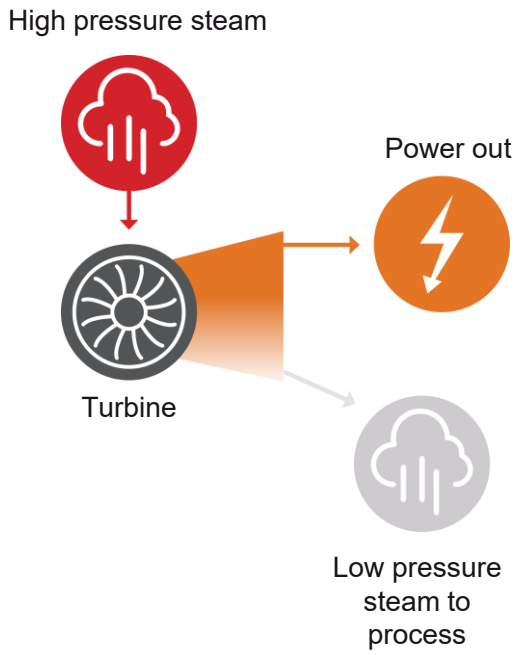
- Sterrett
- Durham
- McComas
- Vet Med

Commissioned in Fall 2024, these solar arrays produce the equivalent energy to power 215 average residential homes annually.

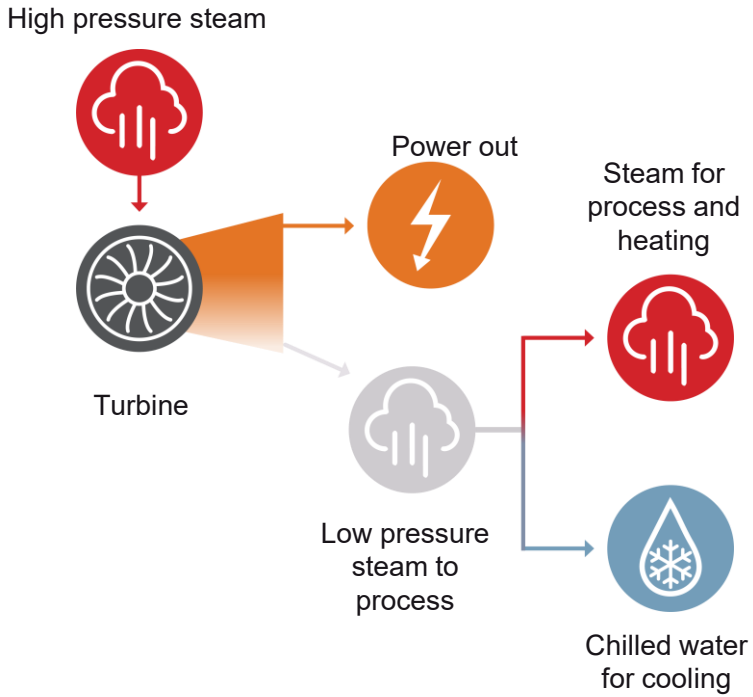
ENTERPRISE OPTIMIZATION – TRI-GEN

Combined cooling, heating, and power (CCHP)

Current combined heat and power (CoGen)



Proposed combined cooling, heat, and power (TriGen)



North Chiller Plant

- Remove two 1,500 ton chillers (31yr)
- Remove one 1,500 ton chiller (21yr)
- Add 2,500 ton absorption chiller
- Add 1,800 ton absorption chiller
- Add 3,000 ton magnetic bearing chiller

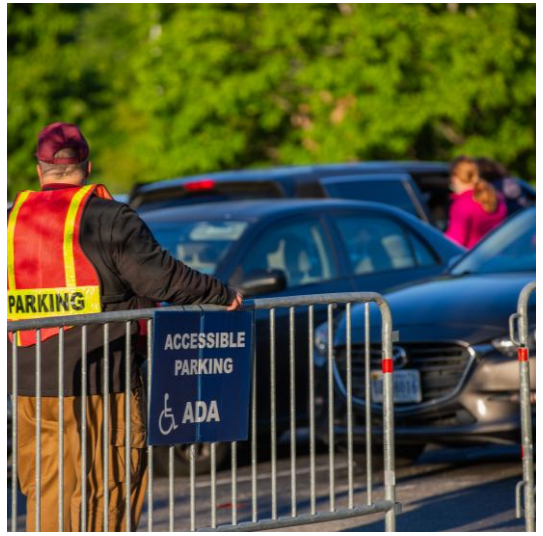
Benefits

- 2,800 ton added capacity
- $5.8m annual energy savings
- Self generation vs. grid
- Source fuel
- More efficient machines
- 8% GHG reduction

CARE AND SERVE

Mission/Vision

To deliver, operate, maintain, and sustain the highest quality facilities, grounds, and infrastructure to ensure Virginia Tech can fulfill its mission and offer the best possible environment for all who live, work, and visit within the university. To be the strongest, most professional, and caring team of servants we can.



As members of the Facilities Team, we're charged with the **stewardship** of our campus – the buildings, grounds and infrastructure – in Blacksburg and across the university's footprint throughout the Commonwealth. **Stewardship** is *"the careful and responsible management of something entrusted to one's care."*