Welcome to the Large Customer Seminar

May 14, 2024

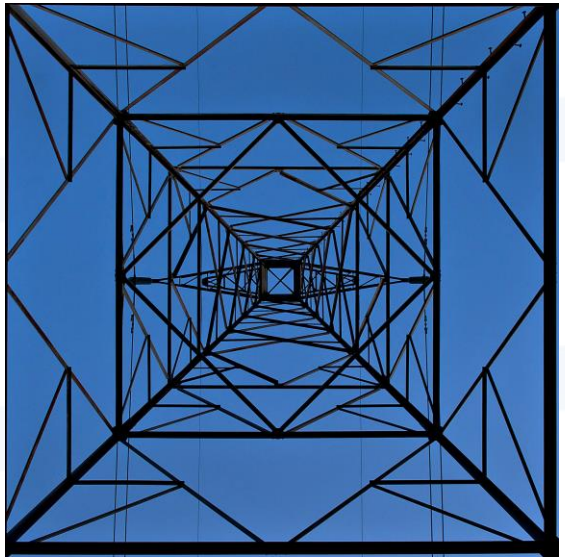
Seminar Agenda

9:00 AM – 9:30 AM	Introduction of Keller Kissam, President – DESC	**Charles Newton, Manager** – Large Customer Group
	Welcome	**Keller Kissam**, President - DESC
	DESC Large Customer Group Recognition	**Charles Newton**
	Safety & Housekeeping	**Shaun Randall**, Vice President – Transmission & Delivery
9:30 AM – 10:05 AM	Regulatory and Energy Transformation Act	**John Raftery**, General Manager - Regulatory Affairs
10:05 AM – 10:40 AM	Sustainability	**Danny Kassis**, GM – New Business & Customer Solutions
10:40 AM – 10:50 AM	**Break**	
10:50 AM – 11:25 AM	Power Quality	**Jeff Inabinet**, Consulting Engineer – Power Quality **Joey Jeffcoat**, Consulting Engineer – Power Quality
11:25 AM – 12:00 PM	Gas Business Update	**Rose Jackson**, Director – Fuel Commodities
12:00 PM	**Lunch** Please enjoy lunch during a breakout session.	
12:30 PM	<u>Lunch n' Learn Breakout Sessions</u> Natural Gas Integrated Resource Plan Demand Side Management	

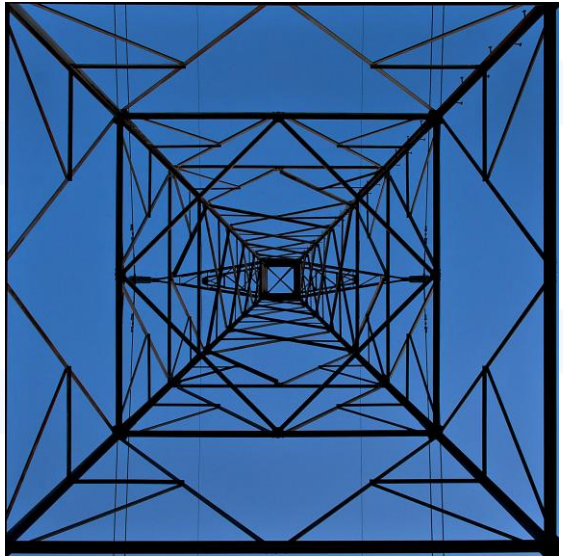
Dominion Energy

Welcome

Keller Kissam

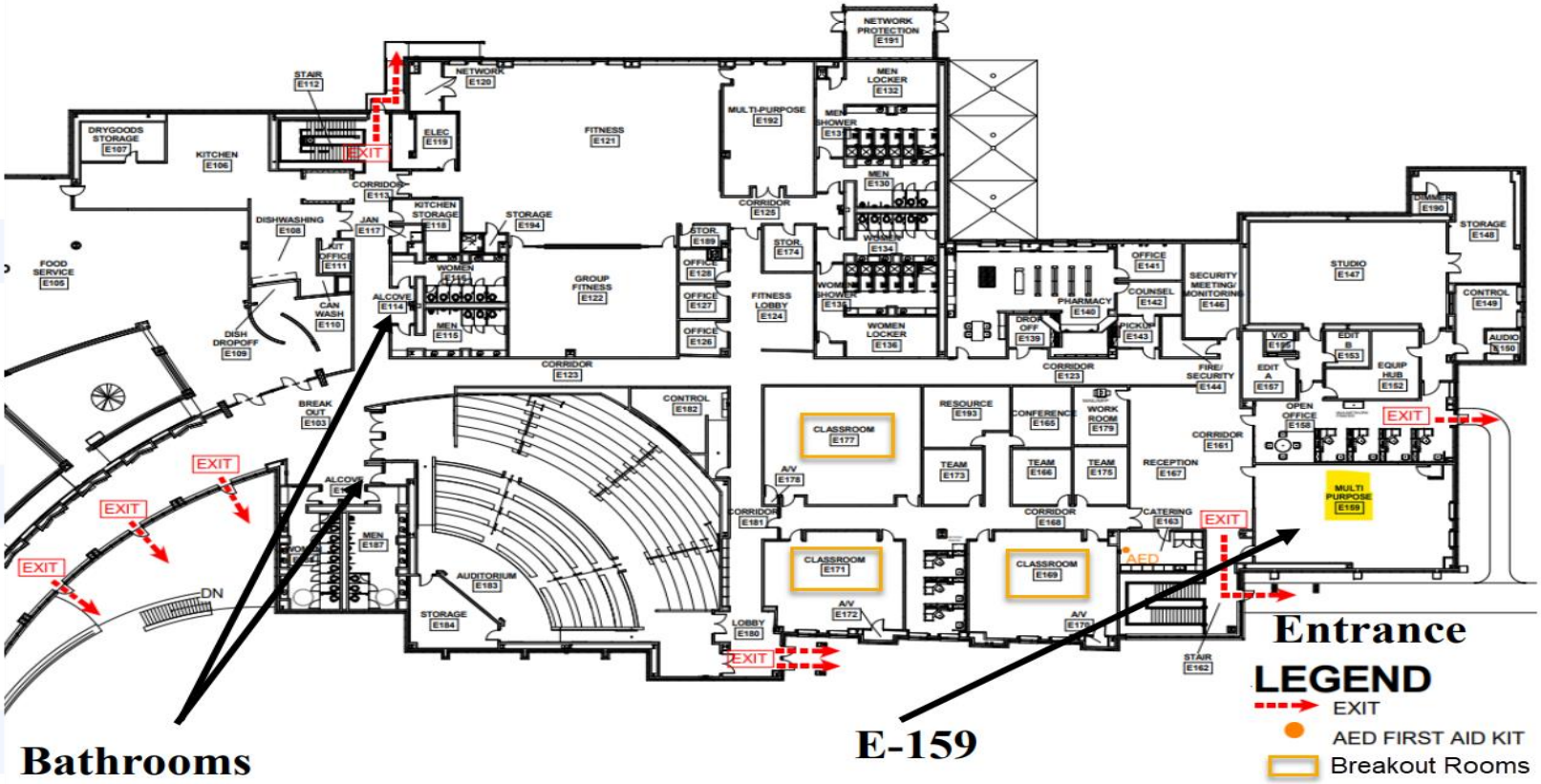


Large Customer Group Recognition



Housekeeping

- ✓ Please place your cell phones on vibrate or silent.
- ✓ Cell coverage for AT&T and T-Mobile may be spotty in the building.
- ✓ Bathrooms are located between the Auditorium and Building D.
- ✓ In case of an emergency, the nearest exit is immediately outside the Auditorium doors.
- ✓ All seminar activities will be held in the Auditorium and Building E. Please do not roam the building.



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OSHA
osha.gov/heat

Prevent Heat Illness at Work

Ease into Work. Nearly 3 out of 4 fatalities from heat illness happen during the first week of work.

Build a tolerance to heat by increasing intensity by 20% each day.

Drink cool water even if you are not thirsty

Rest for long enough to recover from the heat

Take breaks in a shady or cool area

Wear a hat and dress for the heat

Watch out for each other

Verbally check on workers wearing face coverings

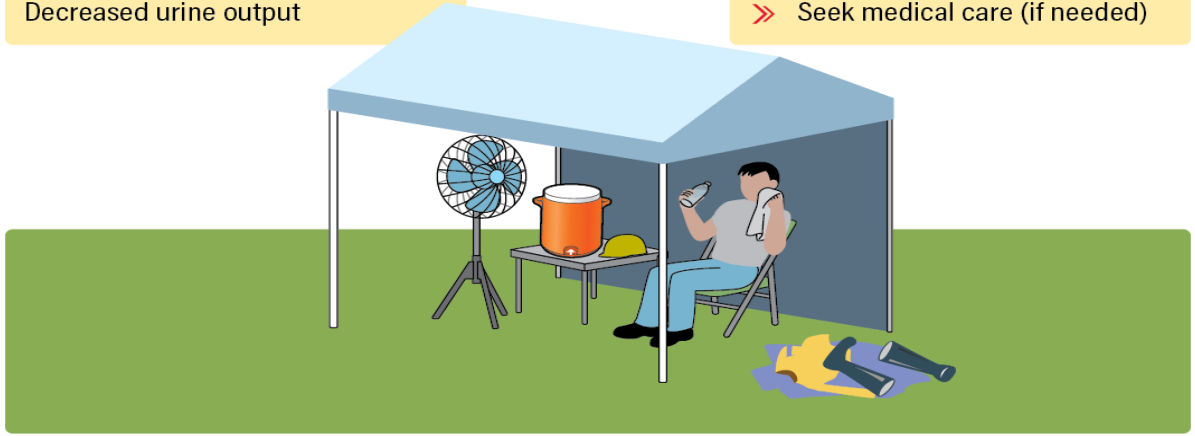
Dominion Energy

OSHA
osha.gov/heat

Heat illness signs and symptoms

Watch for signs of heat illness and act quickly. When in doubt, call 911.

If a worker experiences:	Take these actions:
Headache or nausea	Give cool water to drink
Weakness or dizziness	Remove unnecessary clothing
Heavy sweating or hot, dry skin	Move to a cooler area
Elevated body temperature	Cool with water, ice, or a fan
Thirst	Do not leave alone
Decreased urine output	Seek medical care (if needed)



Dominion Energy

Dominion Energy South Carolina 2024 Large Customer Seminar

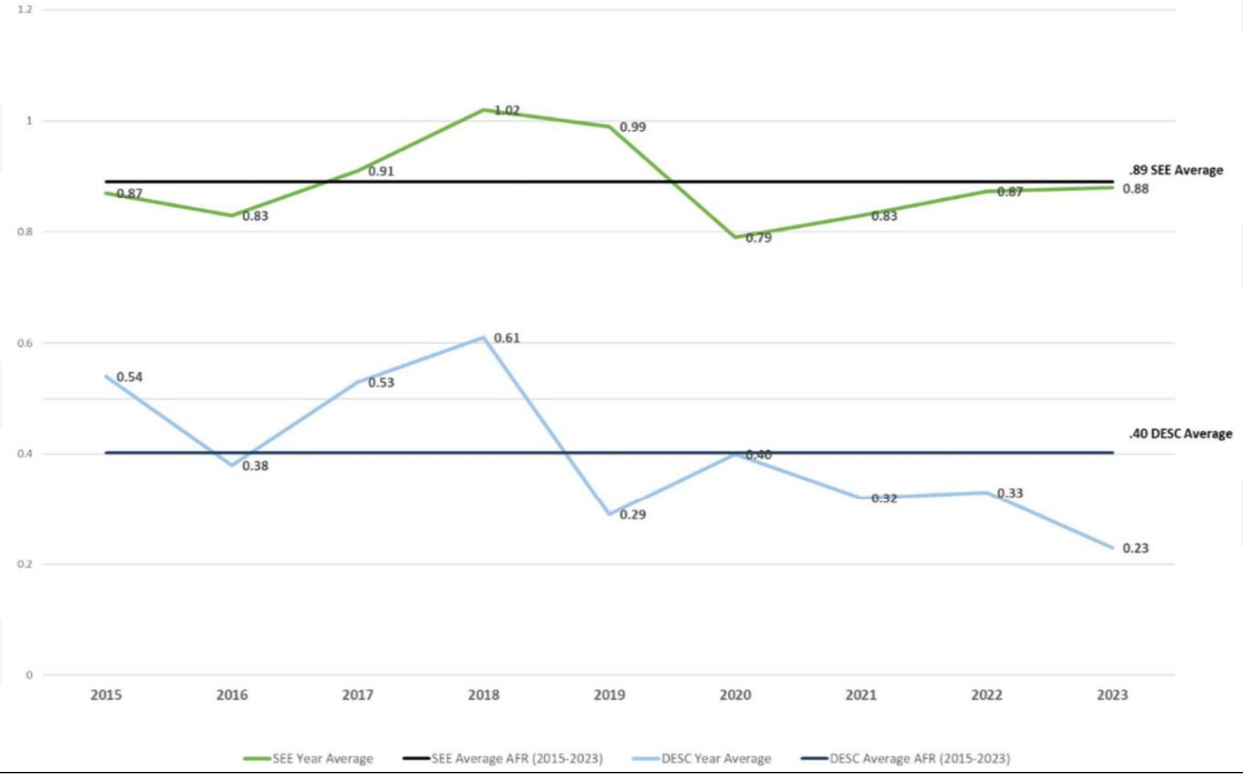
Regulatory Affairs Update

John Raftery, General Manager – Regulatory Affairs
May 14, 2024

Who We Are – Dominion Energy

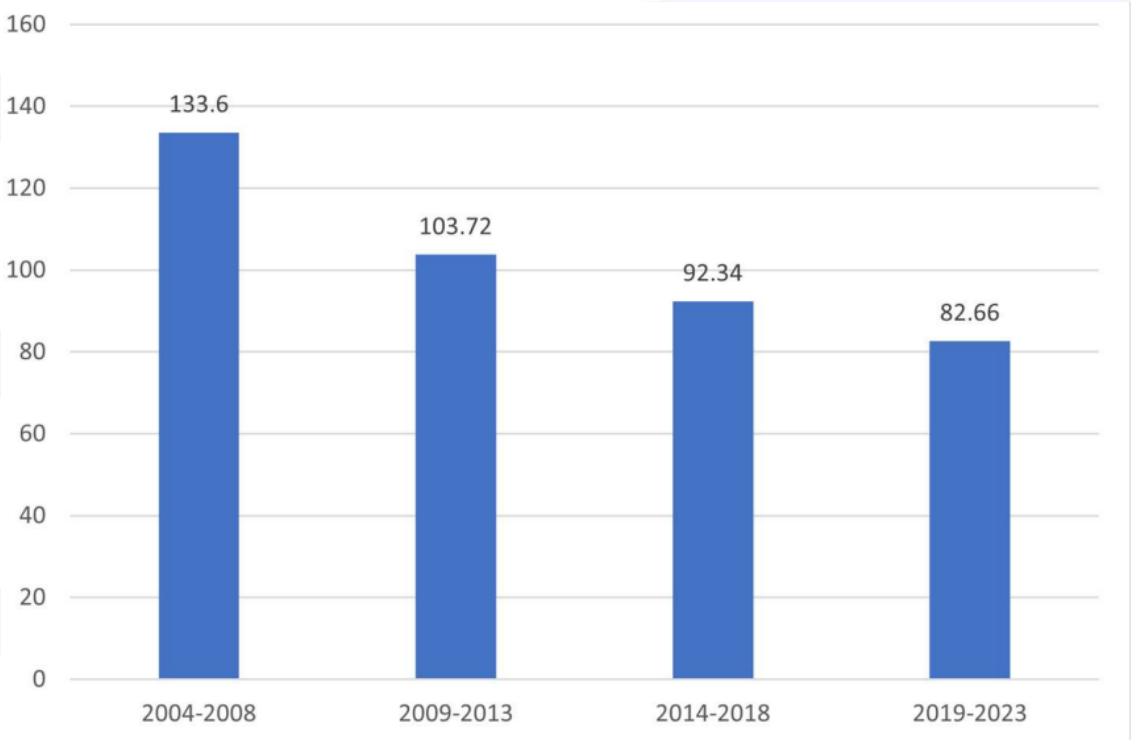
- Approximately 6 million customers in 15 states energize their homes and businesses with electricity or natural gas from Dominion Energy.
- Our Core Values: Safety, Ethics, Excellence, Embrace Change, and One Dominion Energy
- Our Mission: To provide the reliable, affordable, and increasingly clean energy that powers our customers every day.

Accident Frequency Rate



Dominion Energy

System Average Interruption Duration Index



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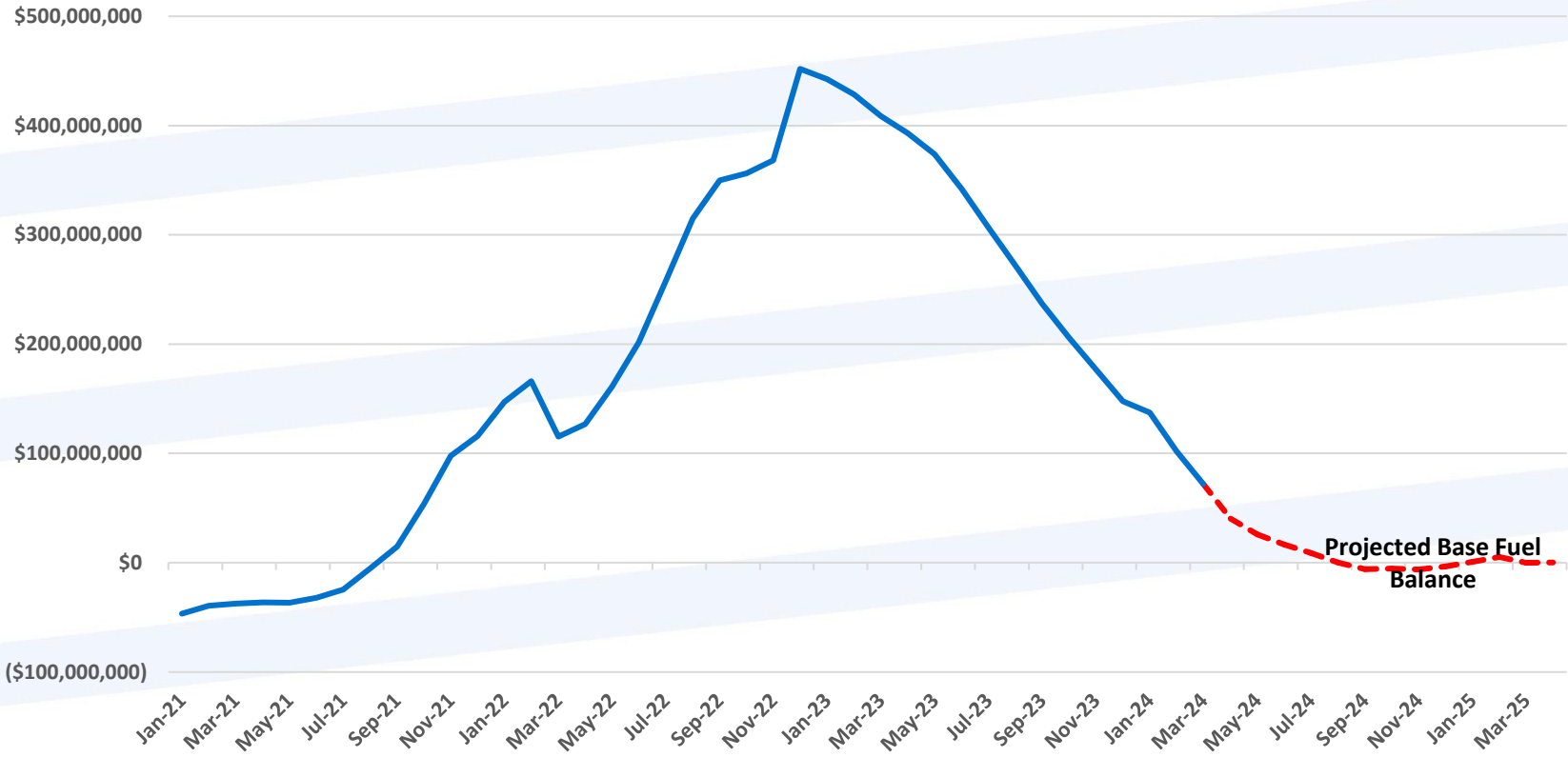
Electric Generation Fuel

DESC Annual Fuel Expense

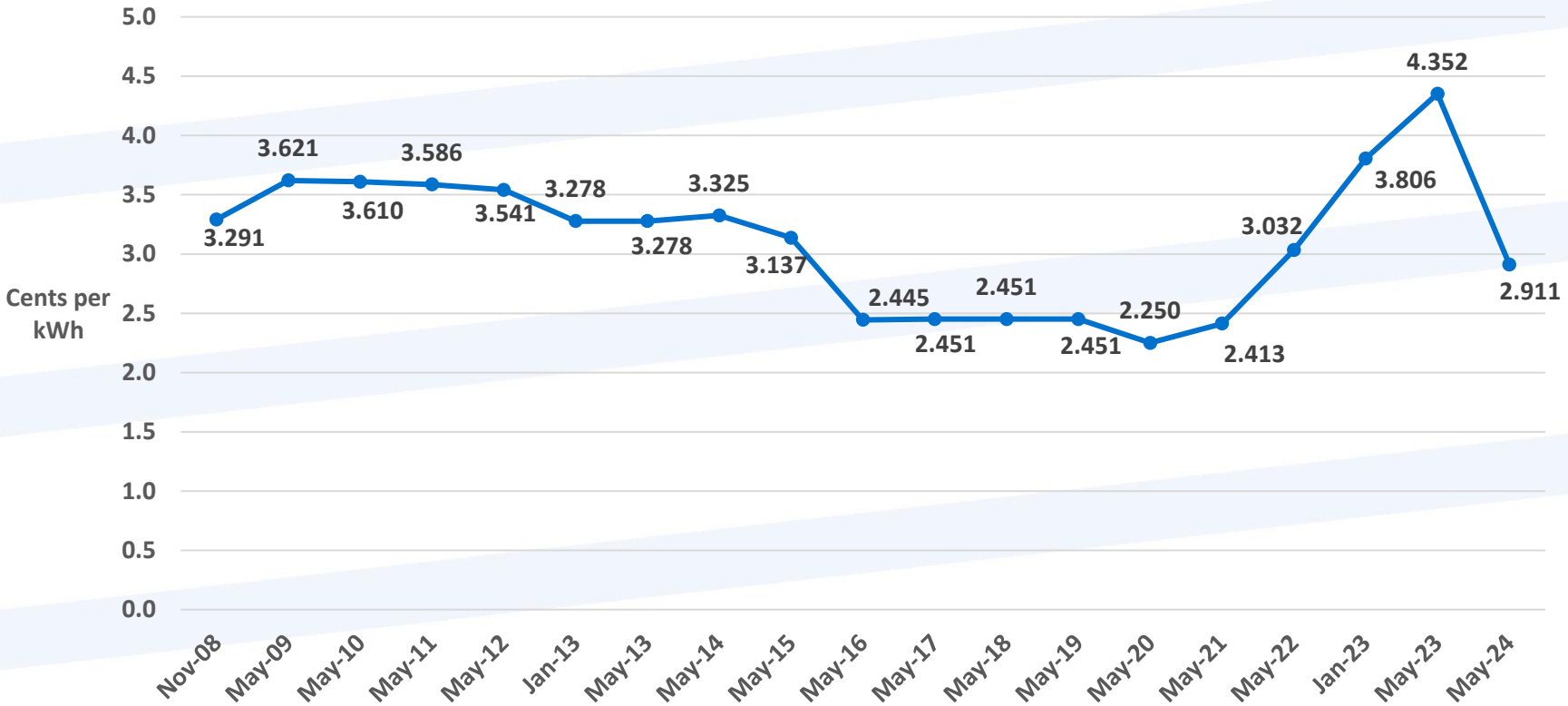
Annual Fuel Expense	
Calendar Year 2020	$480 M
Calendar Year 2021	$720 M
Calendar Year 2022	$1.1 B
Calendar Year 2023	$625 M

Base Fuel Under/(Over) Collection Balances



Dominion Energy

Base Fuel Component History

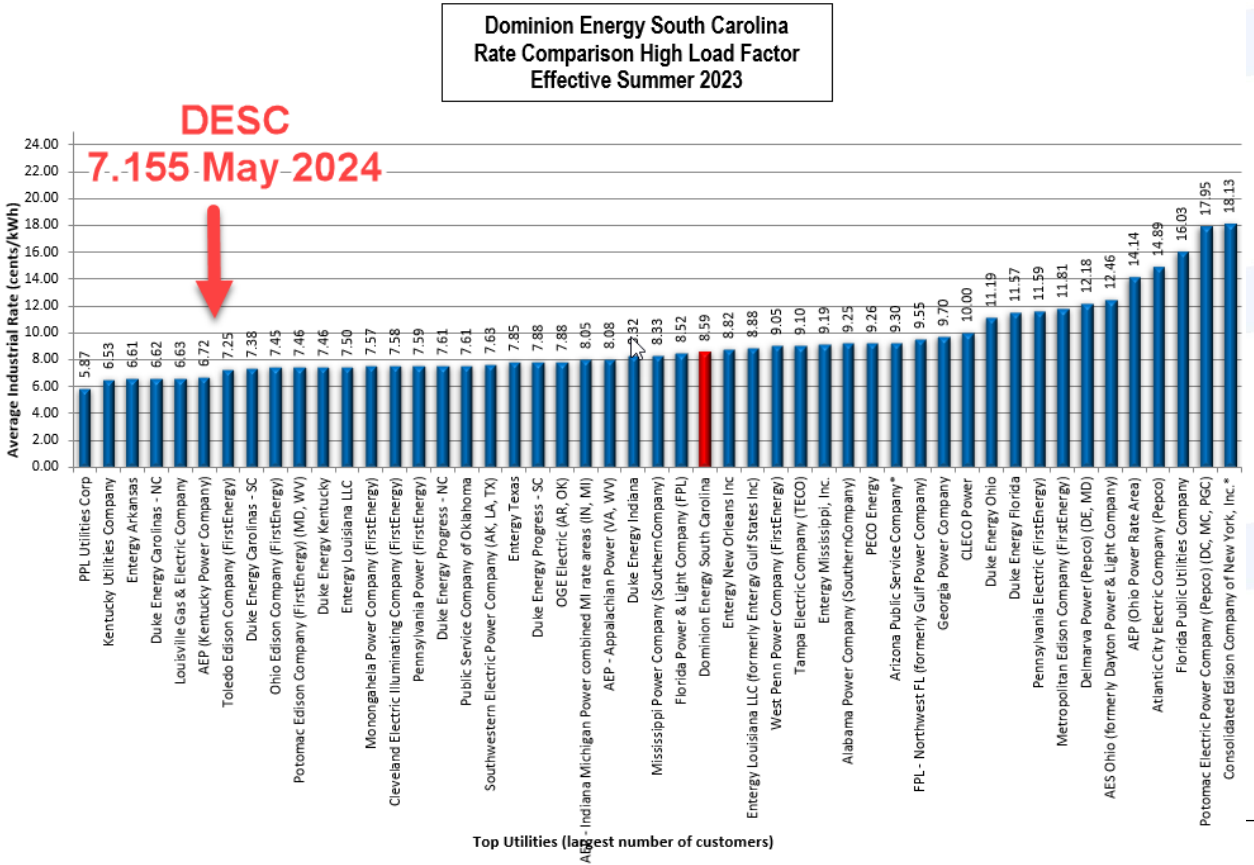


Dominion Energy

Electric Fuel Adjustment by Class

- Residential Bill Impact (Rate 8 Customer using 1000 kWh per month) – 9.32% Decrease
- Commercial Bill Impact (Rate 20 Customer with 500 KVA Demand using 150,000 kWh per month) – 11.67% Decrease
- Industrial Bill Impact (Rate 23 Customer with 10,000 KW Demand and a 90% Load Factor) – 16.92 % Decrease

Industrial Rate Comparisons



Source: Edison Electric Institute | Typical Bills and Average Rates Report Summer 2023
Factors: Industrial Customer, 1000 kW, 650,000 kWh, 89% Load Factor
Based on participation, the data includes utilities in the SEE and 6 of the top 10 Most Populous Metropolitan Areas and the Electric Utilities that Serve Them.

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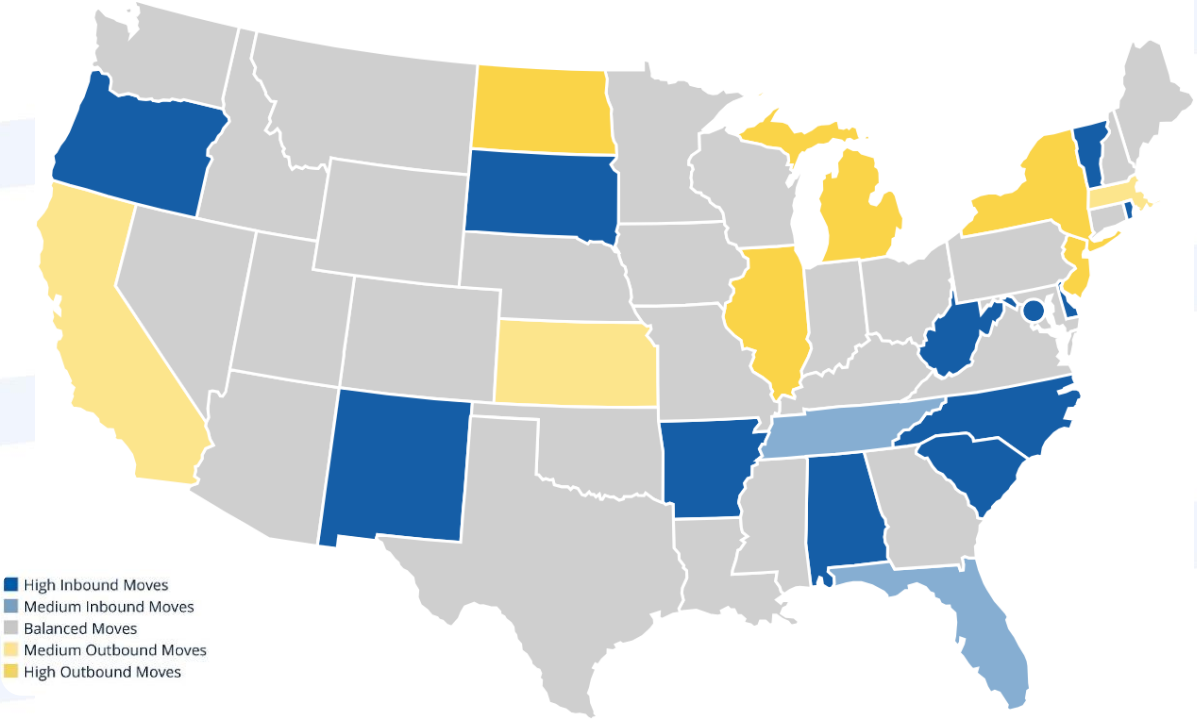
Electric Rate Case

2023 United Van Line's National Movers Study



South Carolina

Total Inbound: 63.2%
Total Outbound: 36.8%

Primary Reason for Moving		
INBOUND		OUTBOUND
26.80%	retirement	8.90%
2.60%	health	5.50%
21.90%	family	39.00%
18.00%	lifestyle	7.50%
13.10%	job	29.50%
6.40%	cost	0.70%

Dominion Energy

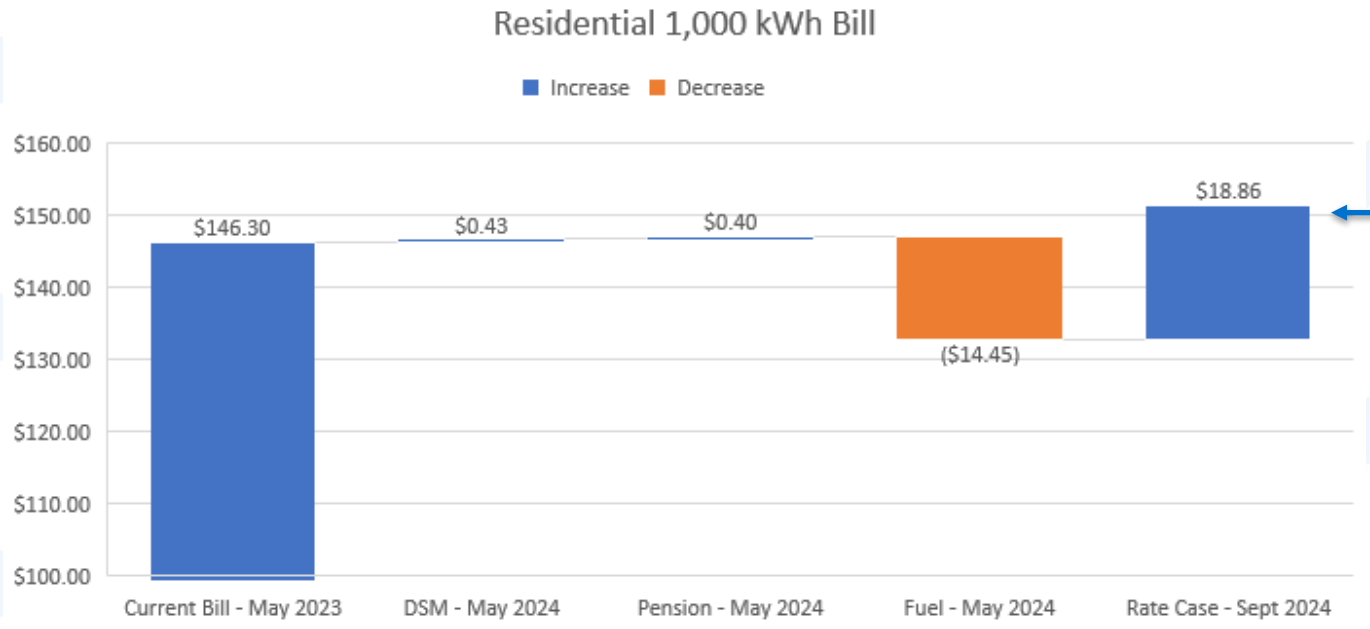
Electric Rate Case Main Drivers

- Approximately 4 years since last rate case filing (August 2020)
- 40,000 new electric customers added to system
- $1.6B in system investments not in rates including
  - $963M for Transmission and Distribution
  - $478M for Generation plants improvements and additional environmental controls
  - $135M for other technology, systems and equipment

Electric Rate Case Main Drivers

- State and local property taxes increased by $33M to $220M
- $5.5M increase to Vegetation Management Program
- Increases to V.C. Summer Nuclear Outage Accrual and Fossil Hydro Major Maintenance Turbine Accrual
- $8.3M Storm Damage Reserve Component Reinstatement
- $17M in Environmental Remediation costs at Parr Peaking Units
- Fair and reasonable Return on Equity (10.6%) to attract Capital and compensate for Regulatory Lag (4.32%)
- Modernized Time of Use Rates
- While Consumer Price Index has risen 19.3%, DESC's O&M has only risen 2.3% over the period

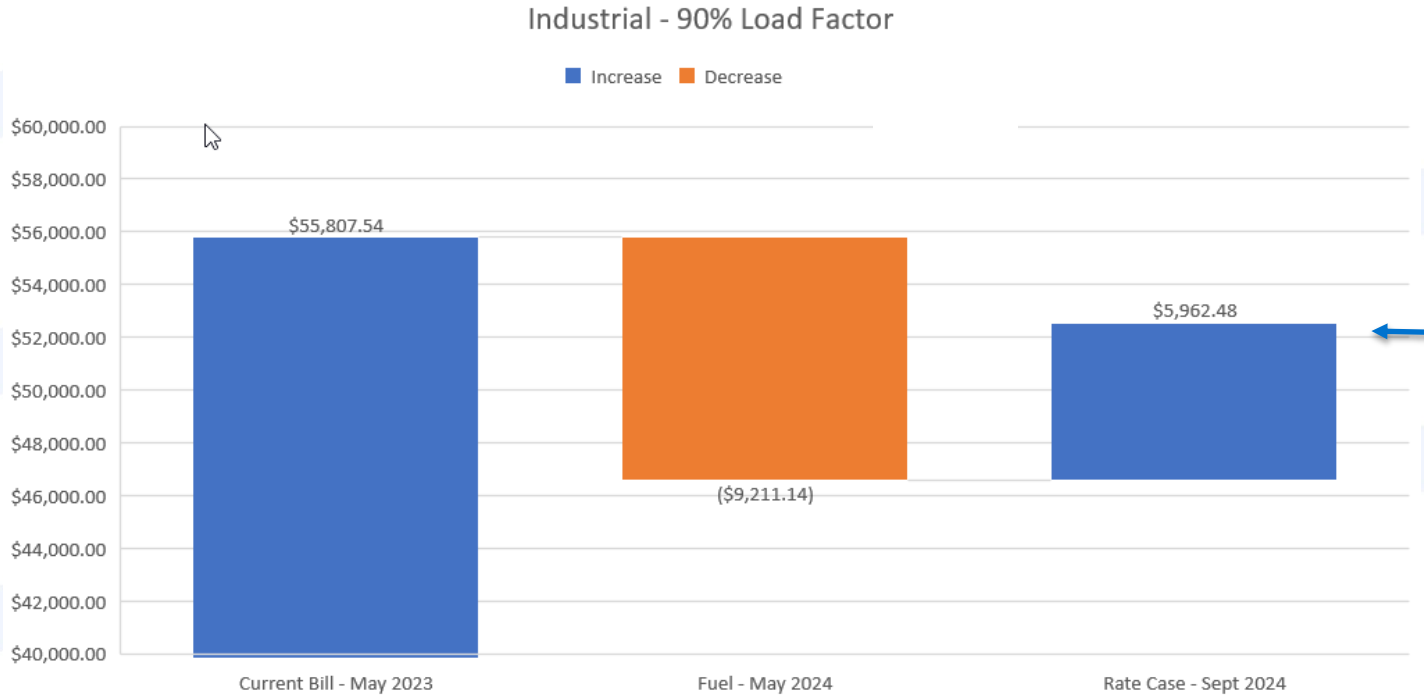
Electric Rate Case - Residential



Sept 2024 Bill = $151.54
$5.24 Increase
or 3.58% from May 2023

$18.86 Increase
or 14.21% from May 2024

Electric Rate Case - Industrial



Sept 2024 Bill = $52,559
$3,249 Decrease, or
5.82% Decrease from
May 2023

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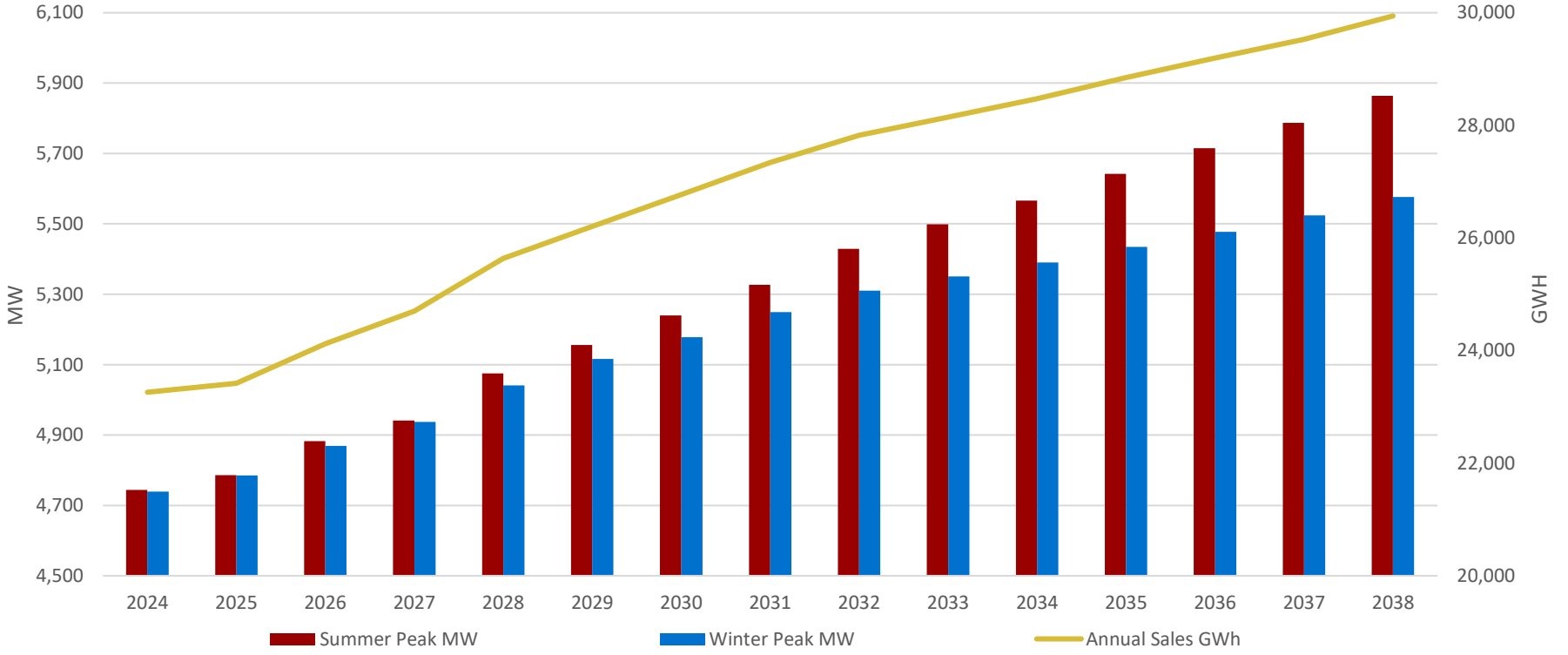
Electric Rate Case Key 2024 Dates

Rate Case Step	Date
Rate Case Application Filed	March 1
Company Direct Testimony	March 15
Rate Case Discovery by Intervenors	
ORS and Intervenor Direct Testimony	June 5
Company Rebuttal Testimony	June 26
ORS and Intervenor Surrebuttal Testimony	July 3
Public Night Hearings (Aiken, Bluffton, Charleston, Columbia)	5/30, 6/10, 6/27, 7/8
Commission Hearing	July 15
Commission Vote/Order	August 15 (approx.)
Rates go into Effect	September (cycle 1)

Integrated Resource Plan

DESC 2024 IRP Update

Energy Sales & Peak Forecast



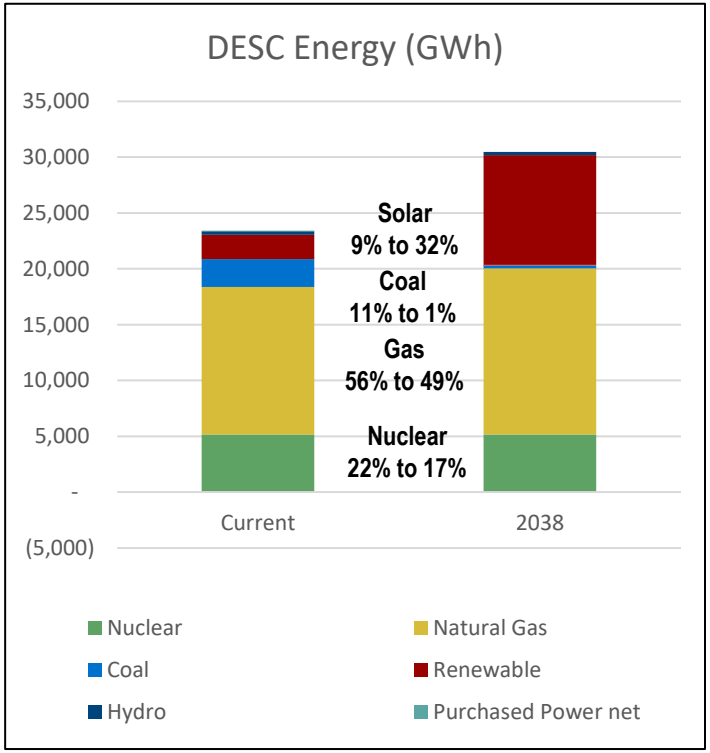
DESC 2024 IRP Update

Key Developments and Assumptions

- South Carolina is Experiencing Significant Load Growth from Economic Development Opportunities
- The Joint Resource was selected in each of the twelve Build Plans
  - Supports and complements the significant additions of Solar and Battery
- Uncertainties Concerning the Wateree and Williams Retirement Dates
  - Electric transmission and fuel supply assets are needed
  - Higher than anticipated load growth requires more generation
  - Regulatory, procurement, or construction delays could change the schedule
- DESC is not changing its goal to retire Wateree in 2028 and Williams in 2030
  - Assumed in twenty of the twenty-two Cases presented
  - Acknowledges that ability to achieve dates has become increasingly challenging
  - Evaluates a hypothetical 4-year delayed retirement Build Plan; Joint Resource supports the replacement of both retirements

DESC 2024 IRP Update

- Generation Mix

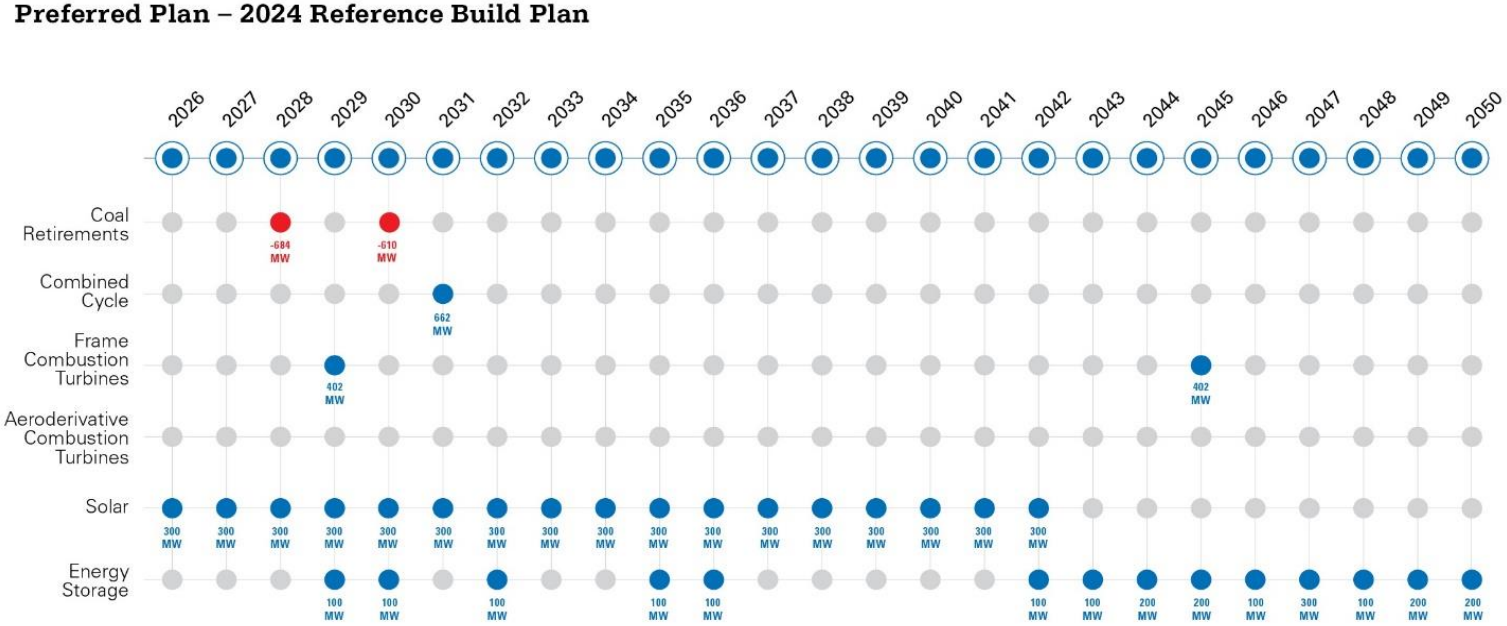


Executive Summary

- **New developments for the 2024 IRP Update**
  - Secured two new economic development projects – a 4.8% increase in demand by 2032
  - Modeled new hypothetical case quantifying impact of delayed retirement dates (2032 – 2034)
- **Retirements (Wateree and Williams)**
  - Preferred Plan retires ~1,294 MW of coal-fired generation by 2030
- **Preferred Plan Adds**
  - 5,100MW of solar and 2,000MW of batteries through 2050
  - 662MW NGCC Joint Resource, primary asset to retiring Wateree & Williams
- **Residential bill 2.24% CAGR through 2038**

DESC 2024 IRP Update

Preferred Plan – 2024 Reference Build Plan



DESC 2024 IRP Update

Short-Term Action Plan

- Williams and Wateree Replacement Capacity and ELG Compliance
- Generation Retirement Planning
- Peaking Modernization Program
- The 2023 DSM Potential Study
- The AMI Roll-out and Residential Demand Reduction Programs
- Continue the IRP Stakeholder Advisory Group Process

The Short-term Action Plan presents the specific short-term actions that the Company intends to take to accomplish its goals for the next three years.

Questions?

Dominion Energy South Carolina 2024 Large Customer Seminar

Sustainability

Danny Kassis, General Manager – New Business & Customer Solutions

May 14, 2024

Dominion Energy

Sustainability Concepts

- Economic
- Environmental
- Social

Mission Connecting to Sustainability

- Our Mission: To provide the reliable, affordable, and increasingly clean energy that powers our customers every day.
- Customers Demanding Clean Energy Options
- Regulatory Compact Requires Participants to Cover Cost of Solutions and Not Shift Cost to Non-Participants

Clearly Define Your Goals

- Definition of clean energy
- Additionality
- Economic Risk +/-
- Geographic Preference
- Project development timeline
- Supply Following Load 24/7

Rules of the Game

- Physics
- Economics
- Regulatory Compact

What DESC Offers

- Single Point of Contact – 24/7/365
- Electric & Gas Account Reviews – Annual or more
- Coordination of Internal Resources – Operations & Engineering, Power Quality, Billing, Payment Processing, Power Quality, Energy Services and Sustainability

What DESC Offers

- Account Management Services
- Technical Power Quality Services
- Energy Efficiency Incentives
- Sustainability Clean Energy Advisory Services
- Electric Transportation Advisory Services

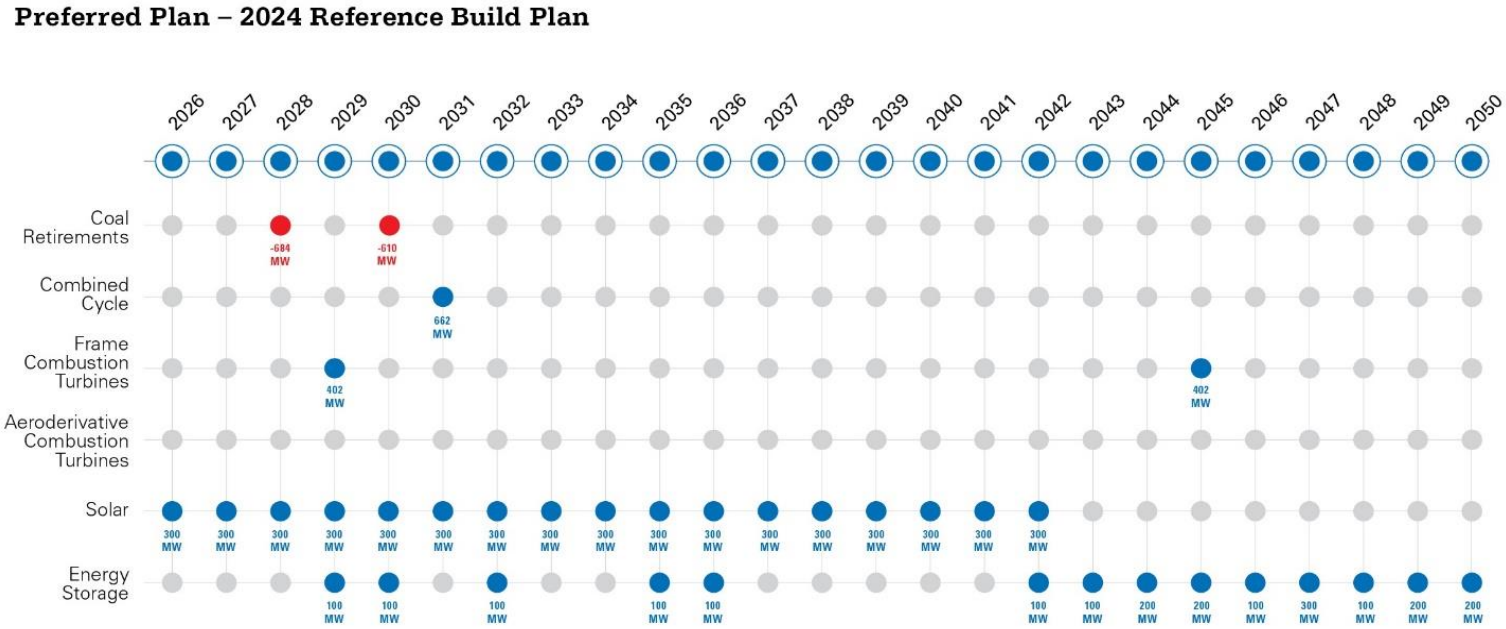
Demand Side Management

- Lighting Incentives
- HVAC Upgrades Incentives
- Food Service Incentives
- Custom Incentives
- Natural Gas Incentives
- Agricultural Incentives

Clean Energy Procurement Options

- Supply Market Changes (IRP/third party)
- Renewable Facilities On Site
- Voluntary Renewable Energy Program
- Renewable Energy Certificates
- Customized Solutions with PSC Approval
- EV Charging Solutions
- Renewable Natural Gas

What is the current market mix or supply?



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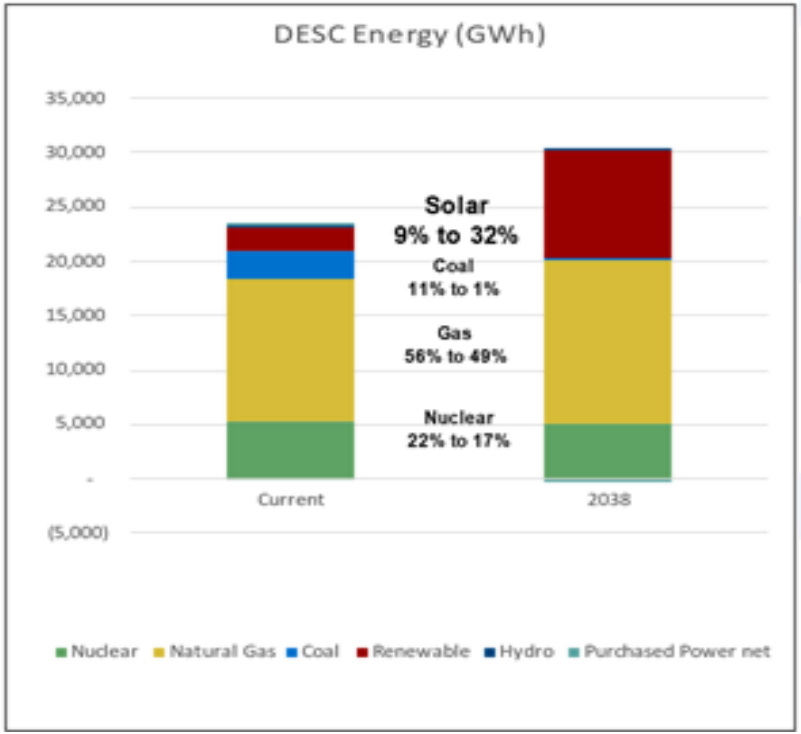

What is the current market mix or supply?

Eight Market Scenarios, 12 Build Plans, 22 Cases and 15 Core Build Plans			
Market Scenarios 8	**Build Plans 12**	**Cases 22**	
Core Cases			
Reference	Updated 2023 Reference Build Plan	**Five Core Build Plans times Three Market Scenarios = 15 Core Build Plans**	**15**
Reference	2024 Reference Build Plan		
High Fossil Fuel Prices	High Fossil Fuel Prices Build Plan		
Zero Carbon Cost	Zero Carbon Cost Build Plan		
Reference	85% CO_2 Reduction Build Plan		
Sensitivity Cases			
Electrification	Electrification Build Plan	**Five Sensitivity Cases**	**5**
Energy Conservation	Energy Conservation Build Plan		
Aggressive Regulation	Aggressive Regulation Build Plan		
Low DSM	Low DSM Build Plan		
High DSM	High DSM Build Plan		
Supplemental Cases			
Reference	Proposed GHG Rule Build Plan	**Two Supplemental Cases**	**2**
Reference	Retirements - 2032/2034 Build Plan		
		TOTAL	**22**

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Dominion Energy South Carolina Renewable Energy

Through April 30, 2024

Solar Photovoltaic – 1,206.8 MW (16,153 Systems)

- Residential 113.1 MW
- Commercial/Industrial 47.2 MW
- Utility Scale 1,030.5 MW
- Community Solar 16.0 MW

Hydro Plants – 794 MW

- Saluda, Neal Shoals, Parr, Stevens Creek (218 MW)
- Fairfield Pumped Storage (576 MW)

Wind Turbine Drivetrain Research

- Dominion Energy Innovation Center @ Clemson University Restoration Institute

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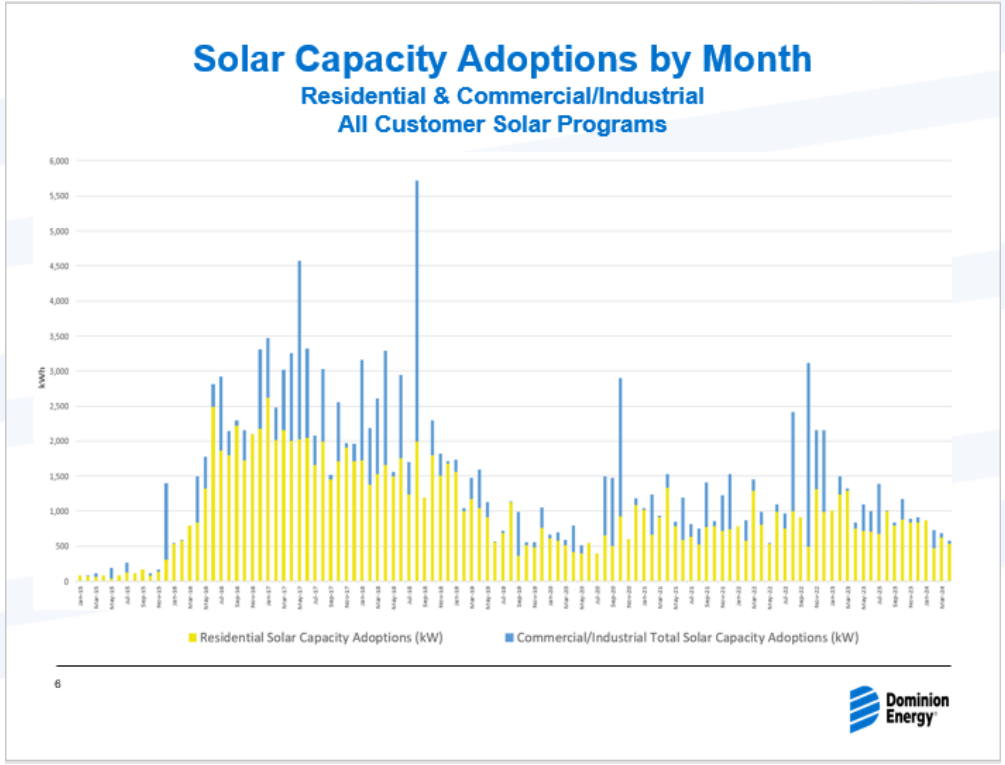
Renewable Facilities On-Site



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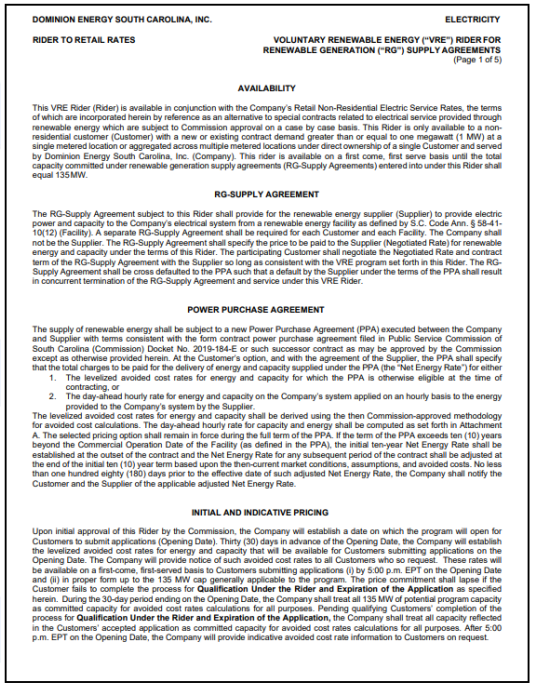
Voluntary Renewable Energy Program



DOMINION ENERGY SOUTH CAROLINA, INC. ELECTRICITY

RIDER TO RETAIL RATES

VOLUNTARY RENEWABLE ENERGY ("VRE") RIDER FOR RENEWABLE GENERATION ("RG") SUPPLY AGREEMENTS
(Page 1 of 5)

AVAILABILITY

This VRE Rider (Rider) is available in conjunction with the Company's Retail Non-Residential Electric Service Rates, the terms of which are incorporated herein by reference as an alternative to special contracts related to electrical service provided through renewable energy which are subject to Commission approval on a case by case basis. This Rider is only available to a non-residential customer (Customer) with a new or existing contract demand greater than or equal to one megawatt (1 MW) at a single metered location or aggregated across multiple metered locations under direct ownership of a single Customer and served by Dominion Energy South Carolina, Inc. (Company). This rider is available on a first come, first serve basis until the total capacity committed under renewable generation supply agreements (RG-Supply Agreements) entered into under this Rider shall equal 135MW.

RG-SUPPLY AGREEMENT

The RG-Supply Agreement subject to this Rider shall provide for the renewable energy supplier (Supplier) to provide electric power and capacity to the Company's electrical system from a renewable energy facility as defined by S.C. Code Ann. § 58-41-10(12) (Facility). A separate RG-Supply Agreement shall be required for each Customer and each Facility. The Company shall not be the Supplier. The RG-Supply Agreement shall specify the price to be paid to the Supplier (Negotiated Rate) for renewable energy and capacity under the terms of this Rider. The participating Customer shall negotiate the Negotiated Rate and contract term of the RG-Supply Agreement with the Supplier so long as consistent with the VRE program set forth in this Rider. The RG-Supply Agreement shall be cross defaulted to the PPA such that a default by the Supplier under the terms of the PPA shall result in concurrent termination of the RG-Supply Agreement and service under this VRE Rider.

POWER PURCHASE AGREEMENT

The supply of renewable energy shall be subject to a new Power Purchase Agreement (PPA) executed between the Company and Supplier with terms consistent with the form contract power purchase agreement filed in Public Service Commission of South Carolina (Commission) Docket No. 2019-184-E or such successor contract as may be approved by the Commission except as otherwise provided herein. At the Customer's option, and with the agreement of the Supplier, the PPA shall specify that the total charges to be paid for the delivery of energy and capacity supplied under the PPA (the "Net Energy Rate") for either

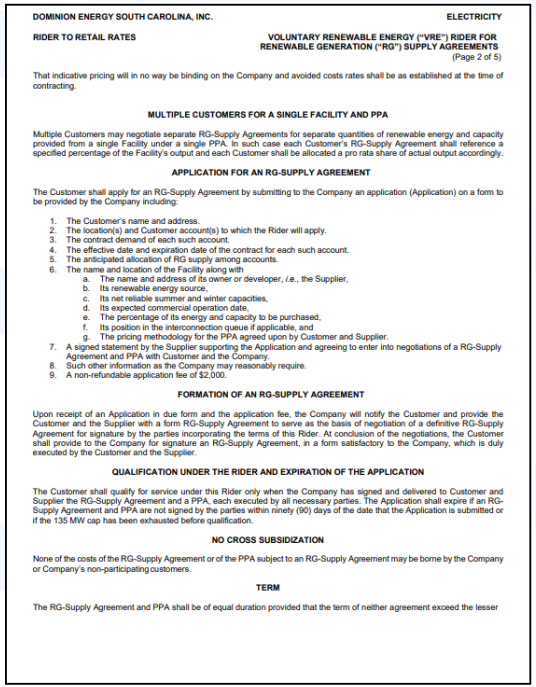
1. The levelized avoided cost rates for energy and capacity for which the PPA is otherwise eligible at the time of contracting, or
2. The day-ahead hourly rate for energy and capacity on the Company's system applied on an hourly basis to the energy provided to the Company's system by the Supplier.

The levelized avoided cost rates for energy and capacity shall be derived using the then Commission-approved methodology for avoided cost calculations. The day-ahead hourly rate for capacity and energy shall be computed as set forth in Attachment A. The selected pricing option shall remain in force during the full term of the PPA. If the term of the PPA exceeds ten (10) years beyond the Commercial Operation Date of the Facility (as defined in the PPA), the initial ten-year Net Energy Rate shall be established at the outset of the contract and the Net Energy Rate for any subsequent period of the contract shall be adjusted at the end of the initial ten (10) year term based upon the then-current market conditions, assumptions, and avoided costs. No less than one hundred eighty (180) days prior to the effective date of such adjusted Net Energy Rate, the Company shall notify the Customer and the Supplier of the applicable adjusted Net Energy Rate.

INITIAL AND INDICATIVE PRICING

Upon initial approval of this Rider by the Commission, the Company will establish a date on which the program will open for Customers to submit applications (Opening Date). Thirty (30) days in advance of the Opening Date, the Company will establish the levelized avoided cost rates for energy and capacity that will be available for Customers submitting applications on the Opening Date. The Company will provide notice of such avoided cost rates to all Customers who so request. These rates will be available on a first-come, first-served basis to Customers submitting applications (i) by 5:00 p.m. EPT on the Opening Date and (ii) in proper form up to the 135 MW cap generally applicable to the program. The price commitment shall lapse if the Customer fails to complete the process for **Qualification Under the Rider and Expiration of the Application** as specified herein. During the 30-day period ending on the Opening Date, the Company shall treat all 135 MW of potential program capacity as committed capacity for avoided cost rates calculations for all purposes. Pending qualifying Customers' completion of the process for **Qualification Under the Rider and Expiration of the Application,** the Company shall treat all capacity reflected in the Customers' accepted application as committed capacity for avoided cost rates calculations for all purposes. After 5:00 p.m. EPT on the Opening Date, the Company will provide indicative avoided cost rate information to Customers on request.

Effective July 26, 2021 Pursuant to
Public Service Commission of South Carolina Order No. 2021-503



DOMINION ENERGY SOUTH CAROLINA, INC. ELECTRICITY

RIDER TO RETAIL RATES

VOLUNTARY RENEWABLE ENERGY ("VRE") RIDER FOR RENEWABLE GENERATION ("RG") SUPPLY AGREEMENTS
(Page 2 of 5)

That indicative pricing will in no way be binding on the Company and avoided costs rates shall be as established at the time of contracting.

MULTIPLE CUSTOMERS FOR A SINGLE FACILITY AND PPA

Multiple Customers may negotiate separate RG-Supply Agreements for separate quantities of renewable energy and capacity provided from a single Facility under a single PPA. In such case each Customer's RG-Supply Agreement shall reference a specified percentage of the Facility's output and each Customer shall be allocated a pro rata share of actual output accordingly.

APPLICATION FOR AN RG-SUPPLY AGREEMENT

The Customer shall apply for an RG-Supply Agreement by submitting to the Company an application (Application) on a form to be provided by the Company including:

1. The Customer's name and address.
2. The location(s) and Customer account(s) to which the Rider will apply.
3. The contract demand of each such account.
4. The effective date and expiration date of the contract for each such account.
5. The anticipated allocation of RG supply among accounts.
6. The name and location of the Facility along with
   a. The name and address of its owner or developer, *i.e.*, the Supplier,
   b. Its renewable energy source,
   c. Its net reliable summer and winter capacities,
   d. Its expected commercial operation date,
   e. The percentage of its energy and capacity to be purchased,
   f. Its position in the interconnection queue if applicable, and
   g. The pricing methodology for the PPA agreed upon by Customer and Supplier.
7. A signed statement by the Supplier supporting the Application and agreeing to enter into negotiations of a RG-Supply Agreement and PPA with Customer and the Company.
8. Such other information as the Company may reasonably require.
9. A non-refundable application fee of $2,000.

FORMATION OF AN RG-SUPPLY AGREEMENT

Upon receipt of an Application in due form and the application fee, the Company will notify the Customer and provide the Customer and the Supplier with a form RG-Supply Agreement to serve as the basis of negotiation of a definitive RG-Supply Agreement for signature by the parties incorporating the terms of this Rider. At conclusion of the negotiations, the Customer shall provide to the Company for signature an RG-Supply Agreement, in a form satisfactory to the Company, which is duly executed by the Customer and the Supplier.

QUALIFICATION UNDER THE RIDER AND EXPIRATION OF THE APPLICATION

The Customer shall qualify for service under this Rider only when the Company has signed and delivered to Customer and Supplier the RG-Supply Agreement and a PPA, each executed by all necessary parties. The Application shall expire if an RG-Supply Agreement and PPA are not signed by the parties within ninety (90) days of the date that the Application is submitted or if the 135 MW cap has been exhausted before qualification.

NO CROSS SUBSIDIZATION

None of the costs of the RG-Supply Agreement or of the PPA subject to an RG-Supply Agreement may be borne by the Company or Company's non-participating customers.

TERM

The RG-Supply Agreement and PPA shall be of equal duration provided that the term of neither agreement exceed the lesser

Effective July 26, 2021 Pursuant to
Public Service Commission of South Carolina Order No. 2021-503

Dominion Energy

Renewable Energy Certificates

- Unbundled RECs: The Corporation purchases the property rights to the MWH generated by the renewables resource separate from the electricity

NAR
NORTH AMERICAN RENEWABLES REGISTRY

North American Renewables Registry Certificate of Retirement

APX, Inc., in its capacity as operator and administrator of the North American Renewables Registry (NAR), hereby confirms that the following Renewable Energy Certificates ("RECs") have been retired in NAR on behalf of:

Total RECs Retired:

Retiring NAR Account Holder:

Retirement Reason Details:

Retirement Date:

NAR ID	Project Name	Project Type	NAR Serial Numbers	Quantity

The North American Renewables Registry is an online platform to issue, serialize and track REC. NAR meets RE100 best practices guidelines and CDP standards for procuring and reporting purchases of renewable energy. The Registry is developed and managed by APX, leveraging more than 15 years of experience in environmental markets. For more information: www.apx.com

APX

Dominion Energy

Customized Solutions with PSC Approval

- Infinite combinations of market supply, renewable facility on site, RECs (in Balancing Area Authority or outside Balancing Area Authority), VREP or similar PPA driven project, and additional resiliency component for shared use
- Highly complex with detail commercial complexity depending on customer needs
- Regulator must approve and the SC Office of Regulatory Staff will not endorse the project if they feel a cost shift occurs

Key Project Development Trends for Clean Energy and Battery Development

- High Interest Rates
- Higher Capital Costs
- Interconnection Challenges
- Financing requiring PPA prices higher than avoided cost
- Solar PV continues to dominate contracting space
- Land use issues

Additional Trends

- Solar prices have trended down for a decade
- Time lag between contract signing and project operation is critical
- Market volatility creates winner and losers
- Voluntary REC prices have been stable
- Large technology companies make us a majority of the clean energy procurement
- Customers hiring clean energy material matter experts
- Sustainability officers and financial officers finally getting in the same room

EV Charging Solutions

- On-bill financing program and approval
- Electrification of transportation advisory services
- Rate impacts: Demand charges and request for new TOU rates

On-bill Financing

Turnkey EV Charging With On Bill Financing

"Dominion Energy partnered with us throughout the entire process. They advised us of best practices for our business and completed the project quickly. Now we are proud to provide EV Charging to our community without any of the hassles of maintenance."
– WTCC Site Host

"Being able to provide EV charging for our employees and clients without having to put any money down upfront made this installation so easy. The peace of mind knowing that Dominion Energy will handle all maintenance is a huge advantage."
-61 West Site Host

Contact Us

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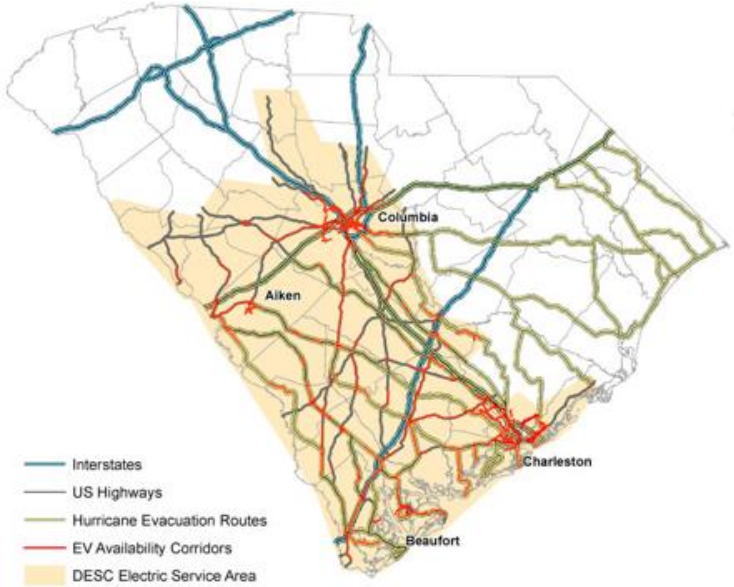
Electrification of Transportation: Advisory Services

Dedicated Transportation Electrification Team



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Renewable Natural Gas at Dominion Energy

Transforming the Future of Sustainable Energy & Agriculture

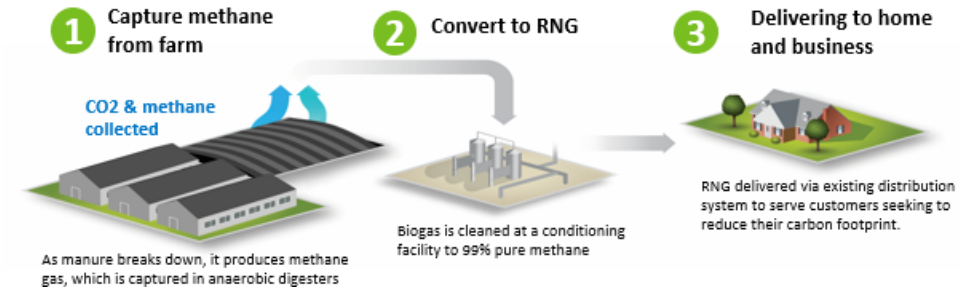
Largest RNG investment in the U.S.

- Portfolio of projects in across 10 states
- $500 million joint venture with Smithfield Foods to develop hog RNG nationwide
- $1 billion with Vanguard Renewables and Dairy Farmers of America to develop dairy RNG nationwide

Reducing greenhouse gas emissions

- RNG captures more emissions from farms than are released when consumers use the gas
- Dominion Energy's RNG facilities will reduce greenhouse gas emissions from U.S. farms equivalent to taking roughly 1.2 million cars off the road or planting 91.2 million trees each year

Turning farm waste into clean energy



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Questions?

BREAK

Dominion Energy SC
Power Quality Group
May 14, 2024

Jeff Inabinet, Consulting Engineer – Power Quality
Joey Jeffcoat, Consulting Engineer – Power Quality

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Power Quality

Topics covered during the presentation

- Our Group
- Our Duties
- EPRI
- PQ Tools
- Power Studies
- PQ Case Studies

Power Quality Group

- Joe Hodges – Manager of PQ and Renewables
- Nathan Stephenson
- Dylan Dantzler
- Joey Jeffcoat
- Jeff Inabinet

Assistance provided:

- Residential, Commercial, Federal/State/Local Government and Industrial Customers
- Solar Farms
- Generation, Transmission, Substation and Distribution groups
- Large Customer Group
- Customer Service Engineering

PQ Group Duties

- PQ Investigations
- Load Studies
- Power Factor Studies
- Harmonic Studies
- Grounding Walk Through
- Surge Protection Surveys

Electric Power Research Institute (EPRI)

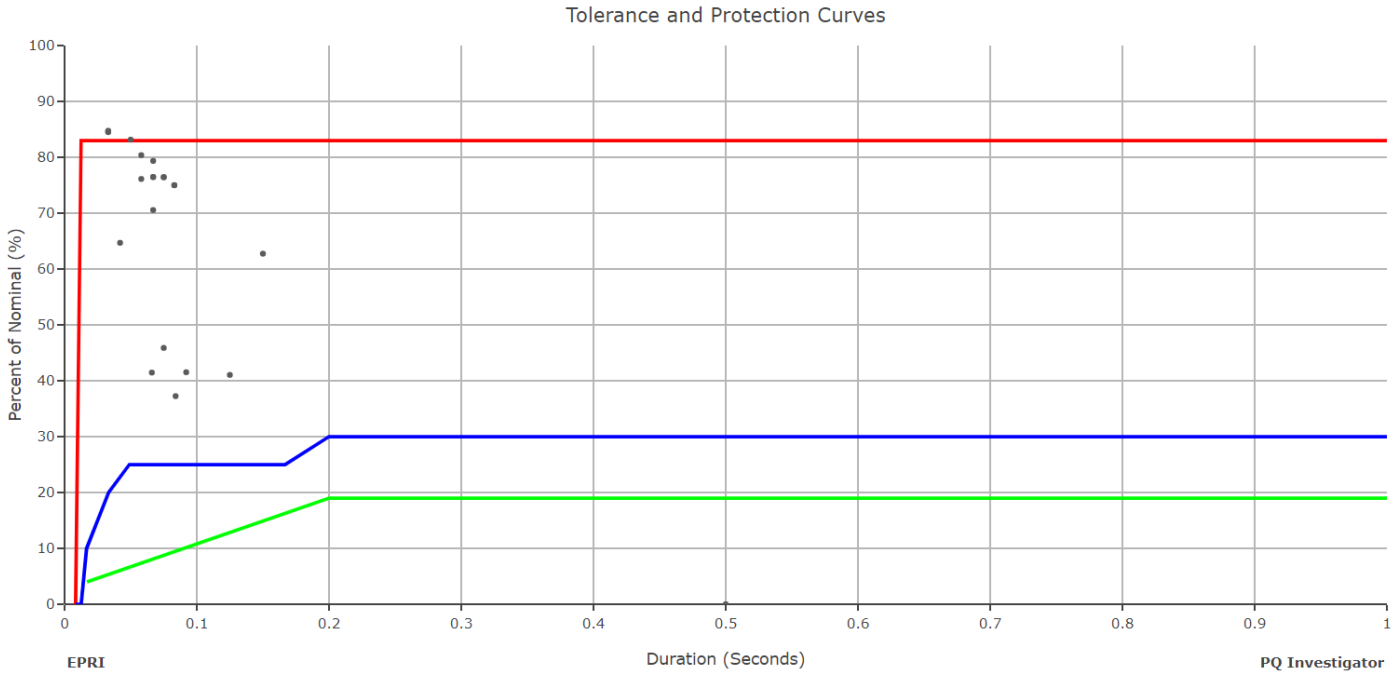
- We are one of many member utilities that funds research for power quality issues:
  - Training – training at EPRI offices in Knoxville with other Utility PQ Engineers
  - Hot Line Calls – Consult EPRI on odd issues and have their engineers offer recommendations
  - PQ tools- PQ Investigator, PQ Dashboard
    - PQ Investigator – Assist with ride through solutions and perform PQ Assessments
      - Based on 500 person-years of experience from EPRI Engineers and hundreds of facility audits by EPRI Engineers
      - Contains information on industrial processes, and nearly 1000 voltage sag ride through curves
      - ASD ride through settings (560 pages) from manuals for most manufacturers
      - Provide ROI analysis on mitigation solutions
    - PQ Dashboard – All in one data location for our PQ monitors, relays, and digital fault recorders. This was an idea of Joe Hodges almost 10 years ago. Now, numerous utilities use this.

PQ Investigations

- Voltage issues that can occur on occasion
  - Voltage Sags and Outages due to weather, animals, and vehicles…(depending on the magnitude and duration of the voltage sag, it can be just like an outage)
    - Blinking lights
    - Dimming lights
    - Equipment shut down
    - Equipment damage
  - Voltage transients from lightning and internal equipment
    - Equipment damage
  - Voltage unbalance can cause current unbalance in 3 phase motors
    - ANSI limit for voltage is 3%
    - Current unbalance is usually 6-10 times voltage unbalance

PQ Investigations

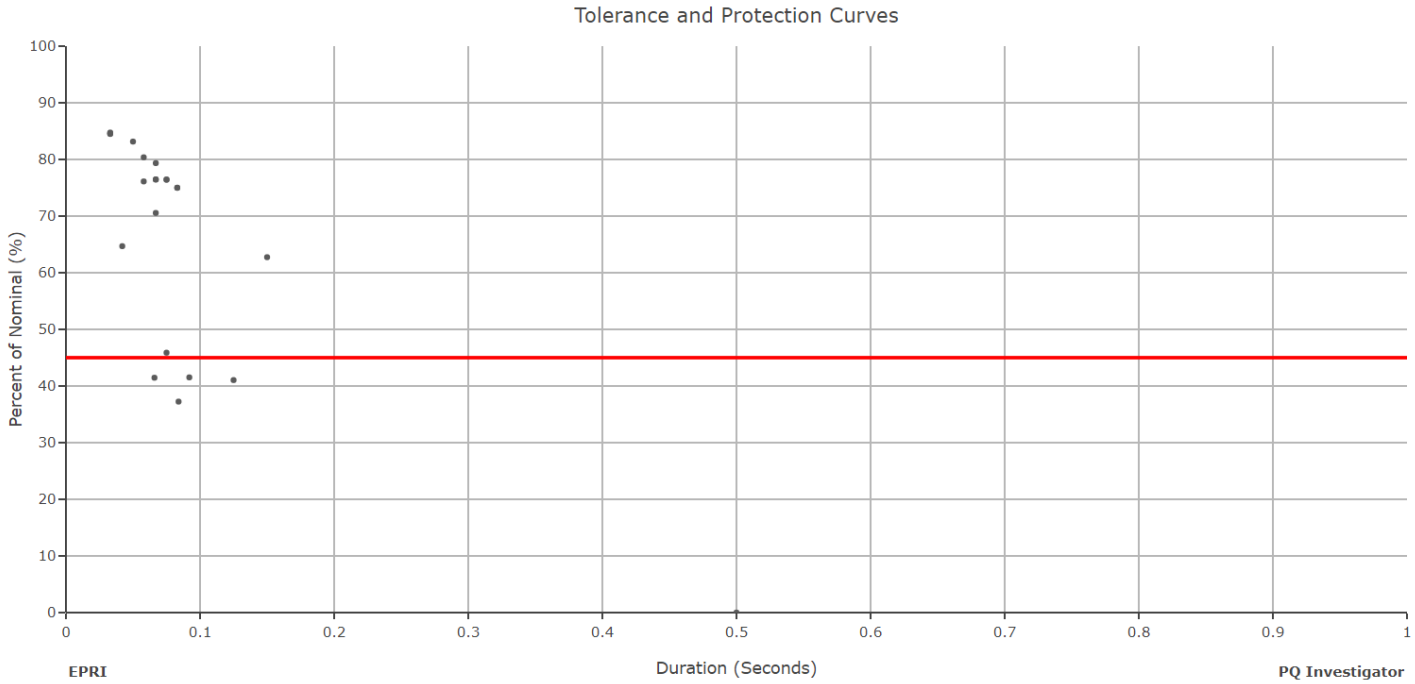
- Solutions (we do not endorse any companies, nor do we profit from these recommendations)
  - Ride-through equipment for voltage sags and outages.
  - These are just a few examples:
    - UPS for computers, servers, communications, and some controls
      - Preventive maintenance schedule should include battery maintenance
    - Preferred ride through is non-battery type for controls:
      - Constant Voltage Transformer (CVT)
        - Replace Control Power Transformer (CPT)
        - CVT oversized 2.5x actual load
      - Dynamic Sag Corrector (mini-DySC)
    - Panel level or building level loads
      - Omniverter or Pro-DySC
  - Replace components with those that are more robust to sags
    - Ice Cube relays that are more robust
  - In design phase, design with DC instead of AC power for controls, especially incorporating 3 phase DC power supplies



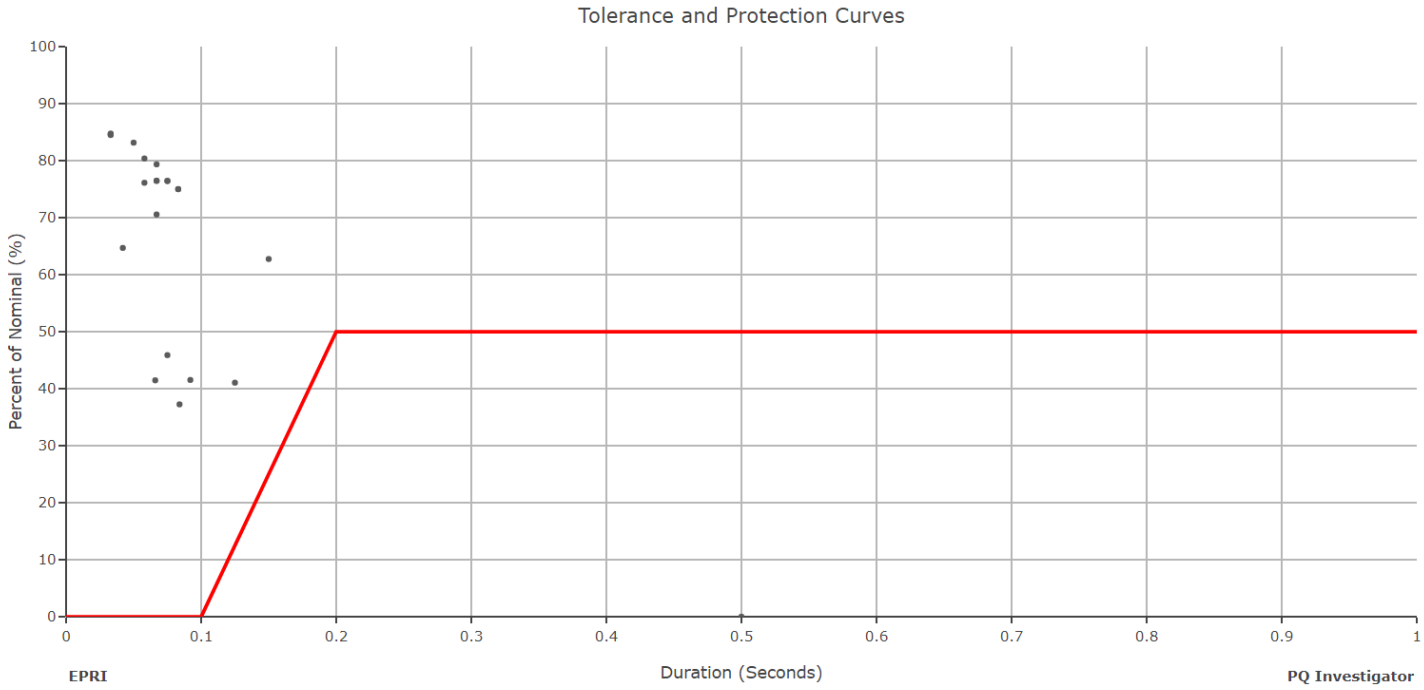
Power Quality Solutions Inc., Nice Cube, Nice Cube Relay 120Vac, Mitigated Curve

Potter & Brumfield, KRPA, KRPA-14AN-120, 120 VAC, 60Hz

Potter & Brumfield, R10 Series, R10-T1P2-115V, 120 VAC, 60Hz



SOLA-Hevi-Duty, MCR Series, Sola MCR Series CVT, 50% Loaded



Allen Bradley/Rockwell Automation, DySC, MiniDySC, Standard Model Sag Response (50% Load)

PQ Investigations

- Solutions
  - Damaged Equipment
    - Grounding – always check the grounding
    - Surge Protection – always recommended and will only work with proper grounding
  - Voltage Unbalance and Levels
    - Work with customer
      - Customer loads – quite often numerous single phase loads have been added to one or two phases that can cause voltage unbalance
      - Transformer taps – voltage may be too low or too high. Too low, and you are more susceptible to voltage sags
    - Work with Electric Operations
      - Check loading on circuits – make certain phases are balanced
      - Cap Banks- blown fuses can cause voltage unbalance

Load Studies

- kW, kVA demand, kWh, Amp load
- Some typical equipment:
  - Production Lines
  - Air Compressors
  - HVAC Equipment
  - Ride-through Equipment – UPS's, CVT's, mini-DySC, Omniverter

Power Factor/Harmonic Studies

- Depending on the rate, customers have to maintain a minimum PF.
- Provide KVAR requirements.
- When adding capacitors at commercial and industrial sites, harmonics must be considered.
- Harmonics exist because of the non 60 HZ loads:

  LED lighting

  Computers

  Adjustable Speed Drives (ASD)
- Install monitors to observe voltage/current harmonics and PF.
- Perform harmonic resonance calculations to determine if harmonic filtering is required to keep fuses, contactors, and capacitors from failing

Harmonic Studies

- Transformer loads
  - DESC and customer owned transformers
  - Derating transformer from heating due to harmonic loads
    - Increase transformer size
    - Reduce loads
- DESC system
  - Permanent monitors are at various points on the transmission and distribution systems

Grounding Walk Through

- Service Entrance Neutral-Ground Bonding
- Building Steel –Ground bonding
- Electrical Sub Panels Separate Neutrals and Grounds
- Ground measurements at meter base for small commercial and residential

Surge Protection

- IEEE says that 80% of voltage transients come from inside (smaller energy transients)
  - Elevators
  - Pump motors
  - Air compressors
  - Office copiers

- IEEE says that 20% of voltage transients come from outside (larger energy transients)
  - Lightning
  - Electrical accidents like car hit poles

Surge Protection

- Important installation note: keep lead length as short as possible. EPRI states you lose 100V of protection per foot.
- Location categories as defined in NEC:
  - Type 1 (IEEE location C)
    - Connected to the supply side of the service disconnect
  - Type 2 (IEEE location B)
    - Connected anywhere on the load side of the first overcurrent device at the building, structure, or separately derived system
  - Type 3 (IEEE location A)
    - Connected anywhere on the load side of the branch-circuit overcurrent protection up to the equipment served , provided the connection is a minimum of 30 ft of conductor distance from the main disconnect.

Monitors

- Portable (PQ, Volts, Amps, Load, Power Factor, Harmonics, Flicker) for temporary monitoring
  - Fluke
  - Dranetz
  - PMI
  - PQube

- Permanently installed
  - Schneider ION Meters, PQube (PQ, Volts, Amps, Load, Power Factor, Harmonics, Flicker)
  - Receive emails with date, time, magnitude, and duration of the fault
  - We have access to SEL's and DFR's

3 PQ Case Studies

- Monitoring is better than flying blind
- DESC saving customer MWhrs
- Mitigating voltage sags eliminates down time

Energization of PV Transformers Causes DC Drives to Shut Down

The initial energization(s) of a non-DESC owned solar farm near a steel plant was causing some of the plant's DC motor drives to trip offline. EPRI consulted us on this issue to help with another neighboring utility.

- The solar farm shown in Figure 1 was connected to the utility via eight transformers (wye-grounded-wye), each having a capacity of 1400 kVA.
- A 600- kvar capacitor bank was connected near the solar farm for voltage support.
- The voltage and current at the point where the step-up transformers of the solar farm were connected to the grid were continuously monitored.
- Circuit in plant was monitored simultaneously

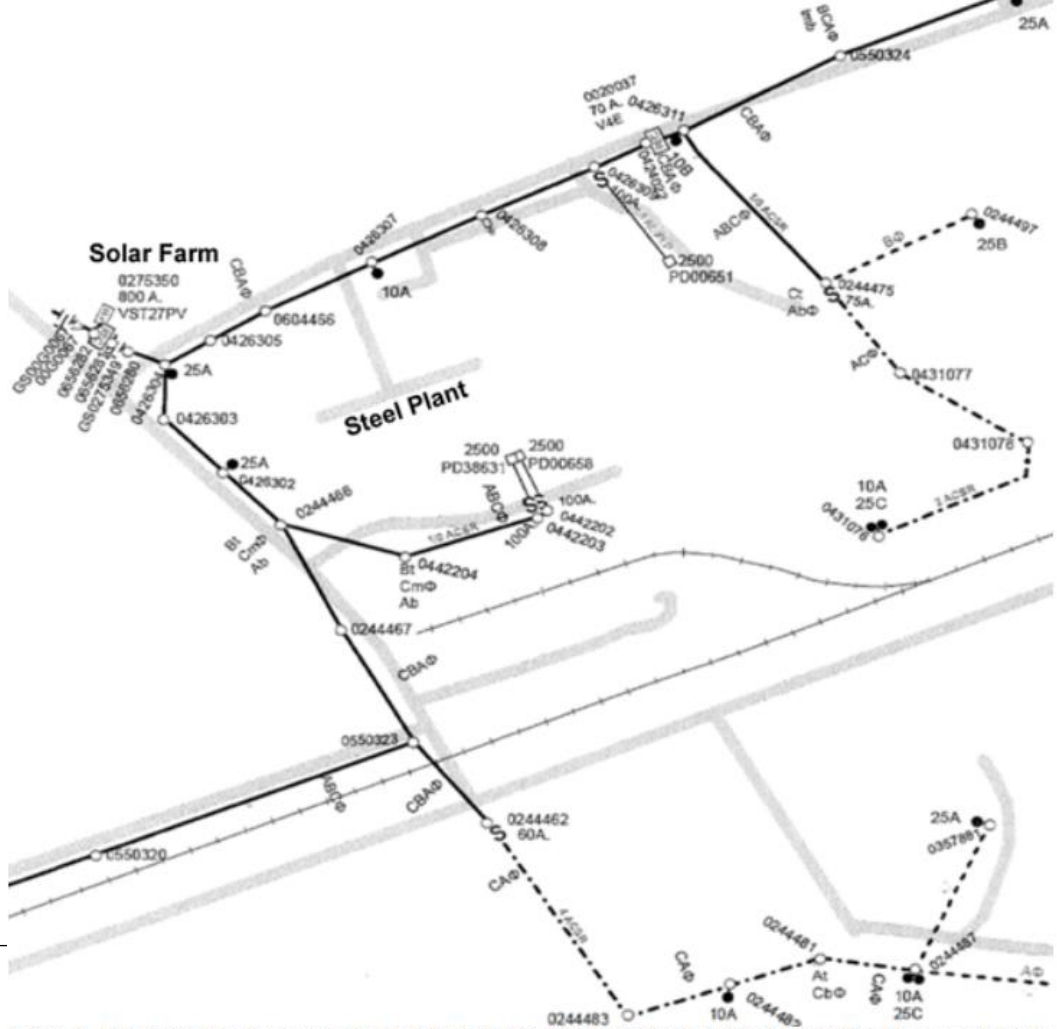
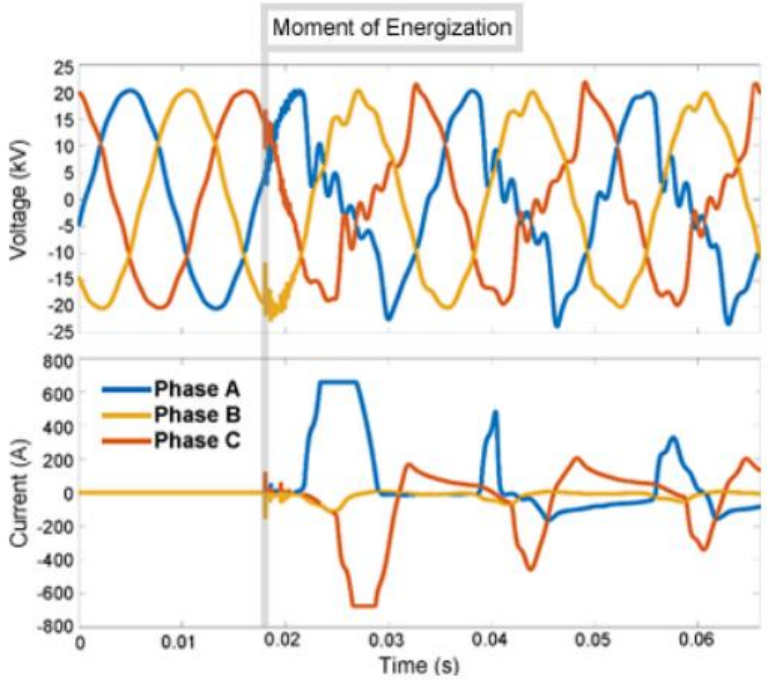


Figure 1. The single-line diagram of the distribution circuit revealed the electrical proximity of the solar farm to the steel plant.

- DESC captured voltage (top) and current (bottom) waveforms on the distribution circuit at the solar farm when the solar farm was energized.
- Multiple zero crossings were one of the causes for drives tripping on over frequency.



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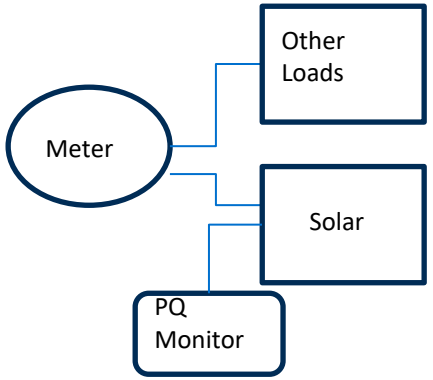
Conclusion

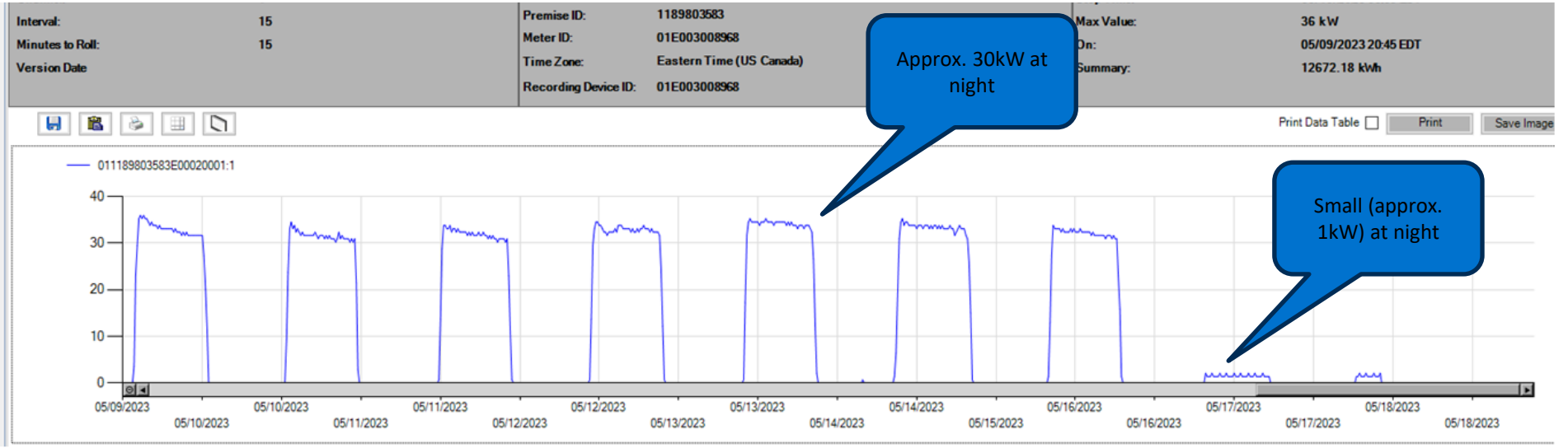
- Monitoring helps to identify the problem so that the correct solution can be applied.
- To solve the problem of drives tripping, DESC suggested staggering the energization of the transformers at solar farm using an automated process.
  - However, the cost of installing additional infrastructure proved to be prohibitive, and ultimately, these plans were shelved.
- The solution to mitigate ringing was to disconnect the nearby distribution system capacitors for the time.

Solar PV Energized at Night

Solar farm was absorbing approx. 30kW at night. This was a cost to the customer that was discovered by DESC. DESC effort helped provide cost savings to the customer. For one month (30 days), approx. 9745 kWh was absorbed (at night) from DESC. If including day absorption, it adds up to approx. 21.6 MWHrs (day+night).

- Our metering department found an odd reading with one of our revenue meters:
  - Revenue meter (shown below) was reporting 30 kW at night.
  - PQ monitoring at transformer, behind the meter, revealed the 30 kW was being absorbed at the Solar Farm.





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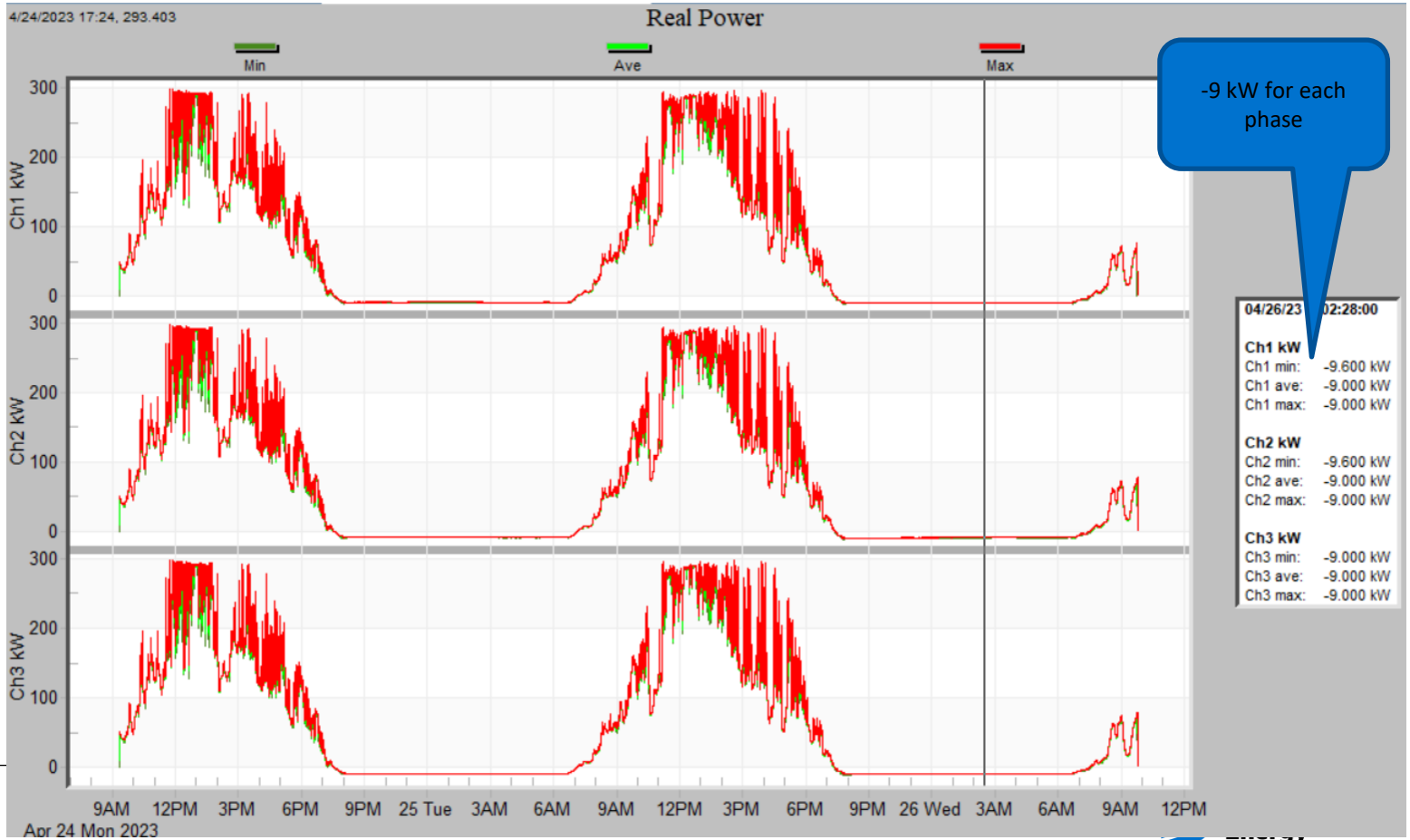
Apr 24-Apr 26 kW profile (PQ Monitoring at transformer)

- At night , -9kW for each phase (-27kW total 3 phase).
- Revenue meter recorded -30kW total 3 phase.



Conclusion

- Renewables and PQ investigated downstream of the transformer and found a faulty inverter.
- Inverter was shutoff and the 30kW load at night was no longer present.
- Further investigation found that another inverter was disabled.

Omniverter Solution at a Chemistry Lab

Chemistry lab tests for water composition, oil, and other chemicals. Most of the time when a voltage sag occurs, lab equipment must be recalibrated. Time to rerun the tests could take as long or longer than 8 hours each time. This was a frequent occurrence during summer months especially due to the exposure of the circuit.

- Omniverter commissioned device during Covid protocols.
- We do not endorse Omniverter. We paid Omniverter.

Just thought you might find this interesting –

- Omniverter was providing backup to the server UPS that was showing low battery.

- Incoming section of AVCRTS supporting UPS with low battery

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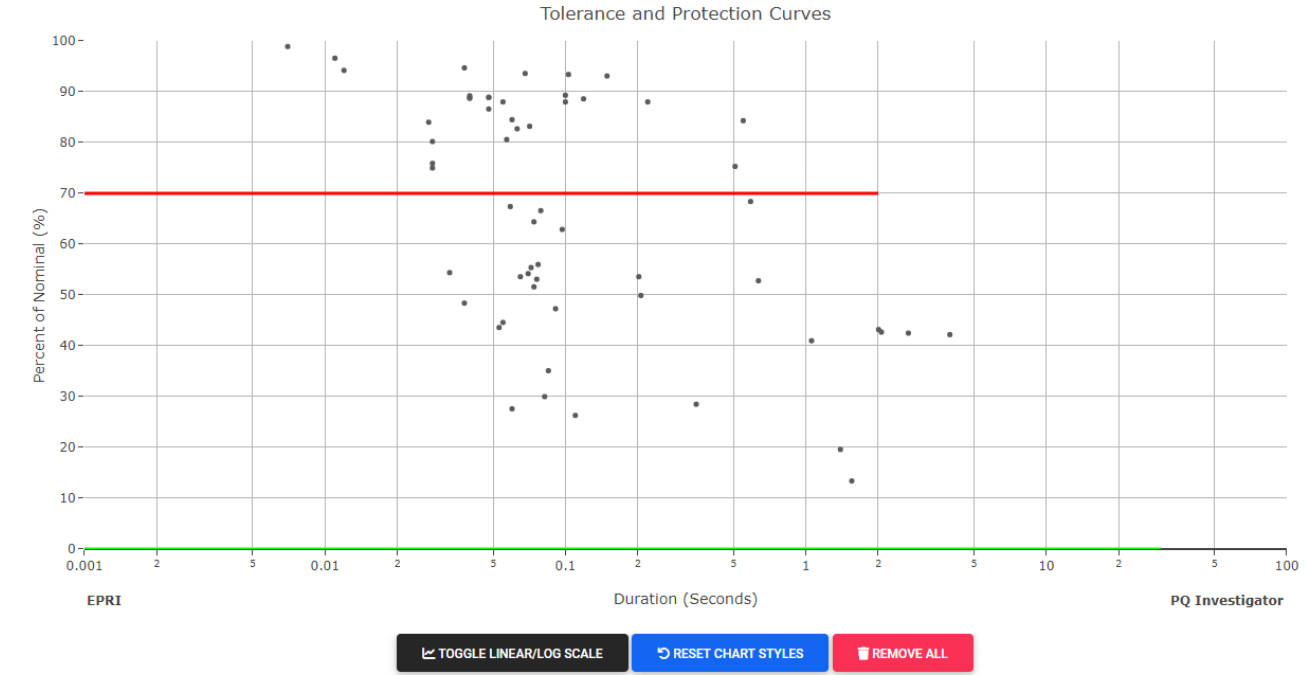
Ride Through Capabilities of Omniverter



DESC Chemistry Lab (10/22/2021 12:07:00 AM - 01/28/2022 08:16:00 AM)

SARFI 70, SARFI 70, SARFI 70, SARFI 70, 60Hz — 45.76% tripped (27/59 events)

Omniverter AVCRTS 3 second (actual 7+ seconds) Ultracap — 100.00% covered (59/59 events)

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AVCRTS Differences with a typical UPS

UPS ‘s offer protection through outages, so why not use a UPS?

- Typical conditions that reduce the reliability of a UPS connected to a dynamic load:
  - High inrush currents cause overload fault conditions, forcing a UPS system into bypass. The AVCRTS uses oversized components and inverters, which handle high inrush currents.
  - Harmonic distortion from non-linear loads causes thermal stress, reducing UPS lifetime. There is less thermal stress on the AVCRTS because the harmonic currents are sent to the utility and not through the inverter.
  - Double conversion UPS systems don’t allow regenerative current through the rectifier, which increases DC bus voltage. This causes UPS systems to fail or drop the load. The topology of the AVCRTS parallel connection allows for 100% power regeneration.
  - The AVCRTS has N+1 redundant inverter modules that support 100% of the load without increasing unit size. N+1 redundancy with a UPS requires twice the real estate, as you are purchasing an additional UPS.

Conclusion

- Installation of the AVCRTS decreased the downtime to the lab nearly 100%.
- Without the AVCRTS, 27 of the 59 events would have caused a re- calibration.
- Given the amount of time saved with each event, AVCRTS was a better choice in the long run.

Thanks for visiting!

We’re here to serve you!

If you have any power quality questions or issues we can be emailed at:

Jeff Inabinet – jeff.inabinet@dominionenergy.com
Joey Jeffcoat – joey.jeffcoat@dominionenergy.com

Dominion Energy

Dominion Energy South Carolina 2023 Gas Rate Case Impacting Transportation
May 14, 2024

Rose Jackson, Director – Fuel Commodities

Why Change the Tariff?

- ORS requested and the Company agreed in a settlement agreement in Docket No. 2020-701 to file a natural gas general rate case on or before April 1, 2023
- Natural Gas Industry has changed dramatically over the last 20 years
  - Currently in Interstate Pipeline constrained environment
  - Current provisions of special contracts & tariffs make capacity planning extremely difficult
- Updates DESC Gas Tariff to reflect current service offerings by other LDCs
  - Eliminates Rate 35/35A Standby service
  - Converts interruptible special contracts to tariff rate
- Winter Storm Elliott reiterated the need for additional balancing tools to protect system integrity

DESC 2023 Natural Gas Rate Case

- March 31, 2023- Rate Case Application filed
- April 28, 2023- DESC filed Direct Testimonies
- Reviewed the rate filing with customers at the Large Customer Group Electric and Gas Seminar on May 23, 2023
- Gas Customer Webinar held to discuss the rate case on June 15, 2023
- Gas Marketer Meeting held with potential marketers on June 26, 2023
- Gas Rate Case Hearing held at the South Carolina Public Service Commission – August 2023
- Gas Rate Case Ruling Issued on October 2, 2023

2023 Natural Gas Rate Case Results

- DESC will move to a Tariff based Structure for Large Users of Natural Gas
- 4 Rates were approved
  - Rate 34 Firm Sales Service
  - Rate 36 Firm Transportation Service
  - Rate 54 Interruptible Sales Service
  - Rate 55 Interruptible Transportation Service
- 1 Rate was eliminated
  - Rate 35 Transportation and Standby Service and associated Rate 35A contracts

Rate 35/35A is Closed

- Rate 35/35A provided Transportation and Standby Service for industrial customers with MDQ of 50 Dts
- Effective for October 2023 Billings, the Rate 35 and the Rate 35A billing structure is closed and not available to any new customers
- Current Rate 35 and Rate 35A contracts can remain in place through their term (most of these contracts were on month-to-month terms)

Customer Options

- Customers will have to elect the priority of service
  - Firm (year-round service)
  - Interruptible (curtailment categories remained the same)
- Customer will have to select the provider of service
  - Sales Service will be provided by DESC (gas supply, upstream interstate pipeline transportation, CGT transportation and LDC distribution service)
  - Distribution Service
    - LDC provides distribution service
    - Pooler/Marketer provides gas supply, upstream interstate pipeline transportation & CGT transportation

New Approved Rates

- Firm Tariff Rates
  - Requires firm MDQ of 50 Dts or greater for large commercial or industrial customers
    - Rate 34- Firm Sales Service
    - Rate 36- Firm Transportation Service
- Interruptible Tariff Rates
  - No minimum usage requirement
  - No alternate fuel backup required
  - Customer must be capable of being 100% curtailed on 2 hours notice
  - Previous Curtailment Categories retained
    - Rate 54- Interruptible Sales Service
    - Rate 55- Interruptible Transportation Service

Firm Rates

- Rate 34 – Large General Service (Firm sales)
  - DESC will provide firm supply, firm transportation on upstream interstate pipelines (including CGT) and firm distribution system transportation
- Rate 36 – Firm Transportation (Firm transportation on the DESC distribution system)
  - DESC will provide firm distribution system transportation
  - Authorized Pooler will provide firm supply & firm transportation on upstream interstate pipeline (including CGT)

Interruptible Rates

- Rate 54 – Interruptible Sales Service
  - DESC will provide interruptible supply, interruptible transportation on upstream interstate pipelines (including CGT) and interruptible distribution system transportation
- Rate 55 – Interruptible Transportation (Interruptible transportation on the DESC distribution system)
  - DESC will provide interruptible distribution system transportation
  - Authorized Pooler will provide supply & interruptible transportation on upstream interstate pipelines (including CGT)

Contract/Rate Transition Period

- Gas Rate Case Settlement provided existing customers with a transition period of two winter seasons
- All existing customers can remain on their current contract structure until April 1, 2025
- All customers must select service to one of the 4 large use rates by Jan. 1, 2025
  - DESC will evaluate all service requests on a first come first service basis
  - New rates elections will become effective April 1, 2025
  - Rate 34, 35 and 35A customers requesting a move to Rate 36 will be allocated capacity on CGT (Carolina Gas Transmission) if capacity is available for the period of April 1, 2025, through September 30, 2026

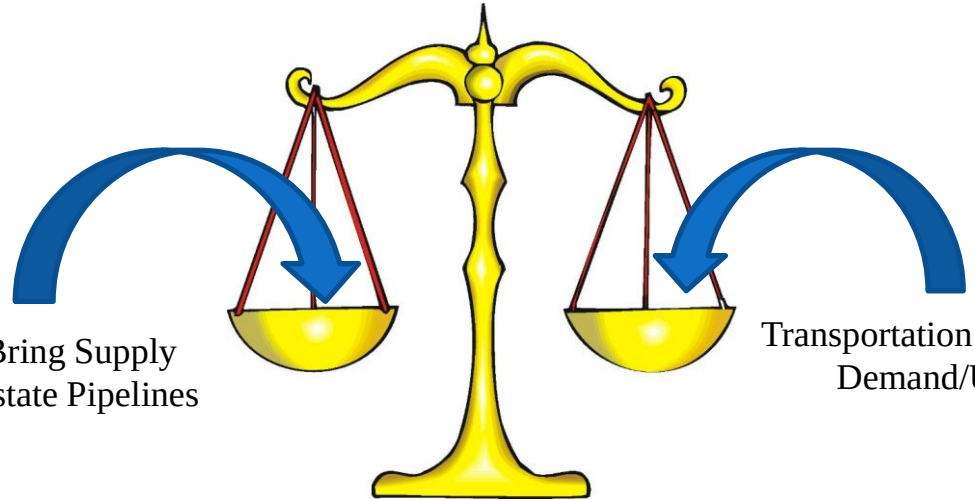
DESC Annual Rate Election Review Process

- Beginning in 2026, customers will make an annual rate election on July 1st of each year with an effective date of Oct. 1st
  - Rate election is only required if a rate change is requested by the customer or their firm MDQ has dropped below the minimum MDQ of 50 Dts
- Firm Transportation Requests (Rate 36)
  - Modeled & approved by DESC Engineering group
  - CAIC if applicable will be calculated
- Firm Sales Requests (Rate 34)
  - Modeled & approved by DESC Engineering group
  - CAIC if applicable will be calculated
  - Firm Transportation on CGT & Upstream Pipelines evaluated by Gas Supply

DESC Annual Rate Election Review Process (Continued)

- Interruptible Sales (Rate 54)
  - Customer can move to Rate 55 one time during the initial 12-month period
  - Customer can move to Rate 34 (if approved) one time during any 12-month period
- Interruptible Transportation (Rate 55)
  - DESC may refuse service under this rate if -
    - it does not have the Gas delivery capacity in excess of the requirements of existing customers
    - the requested service would require an uneconomic enlargement or extension of DESC's facilities

Transportation Pooling



Poolers Bring Supply
from Interstate Pipelines

Transportation Customers
Demand/Usage

DESC Citygate

Transportation Pooling Agreement

- Poolers/Marketers who want to serve DESC transportation customers (Rate 36- Firm Transportation) or (Rate 55- Interruptible Transportation) will be required to execute a Transportation Pooling Agreement as approved by the SC PSC in DESC's recent gas rate case
- Once a Transportation Pooling Agreement has been signed by the Pooler/Marketer, the DE Corporate Credit Dept. will review the Transportation Pooling Agreement and determine if any credit assurance is required
- Once approved by the DE Corporate Credit Dept., a fully executed copy of the Transportation Pooling Agreement will be returned to the Pooler
- A virtual pool will be established on the DESC EBB; Pooler may nom by Pool or by Customer
- Pooler will be invoiced for end of month virtual pool imbalance

Changes Related to Balancing

- Currently a monthly imbalance is calculated for each customer and the balancing charge is billed to the customer
- The proposed Pooling procedure will allow Authorized Poolers to aggregate customers into a virtual pool on the DESC distribution system
  - Nets longs and shorts
  - Mitigates cashout costs to the Pooler
  - Provides DESC with another balancing tool other than Customer Curtailments
- Allows Poolers to trade imbalances

DESC's Historical Curtailments

- DESC must provide reliable service to firm customers who pay a premium for firm service
- Only tool to balance DESC's overall system
- Operational reasons for Curtailments
  - Major Fluctuations in weather
  - Distribution System Concerns
    - Localized pressure issues
    - Localized pipeline constraints
  - Interstate Pipeline Concerns
    - Lack of supply/capacity to serve interruptible transport customers
    - Operational Flow Orders ("OFOs") on interstate pipelines

Changes Related to Balancing

- Addition of Operational Orders
  - DESC will provide Pooler at least 4 hours advance notice of the effective time of any restrictions in an Operational Order
  - Tolerance level of Pooler's approved nomination will be determined by DESC based on current operating conditions
  - Pooler may trade imbalances for any gas day the Pooler is subject to an Operational Order penalty
  - Penalty equal to the higher of:

a) $50 per Dekatherm

b) 3 times the Gas Daily "Transco, zone 5 del." Midpoint price

Pooling Scheduling Requirement

- Poolers can only pool customers who have switched to Rate 36- Firm Transportation or Rate 55- Interruptible Transportation
  - Poolers are no longer required to nominate by customer
  - Customer MDQ is only used for billing customers & no longer a limit on daily nominations
  - Pool balancing is at the DESC citygate- no fuel is collected
  - DESC receipt point should match the upstream delivery point; DESC delivery point will be the Poolers DESC pool
- During the transition period, Poolers must continue to nominate by customer on Rate 35/35A
  - Customer MDQ will limit daily noms
  - Contract fuel percentage (most common fuel rate- 3%) will be assessed
  - Customer will be invoiced for their individual imbalance (doesn't qualify for pool balancing)

Questions?

Thank You!

Lunch is served in Rm E159.

Please grab lunch and join a breakout session.

Lunch n' Learn Breakout Sessions	
Natural Gas Rates Open Discussion Rose Jackson and Charles Newton	E169
Integrated Resource Plan Eric Bell, Manager – Electric Market Operations	E171
Demand Side Management Jesse Erbel, ICF Program Manager	E177

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