



Sustainability Report and Implementation Plan

2020

Submitted: 06/30/2020

TVA TENNESSEE
VALLEY
AUTHORITY

Tennessee Valley Authority
2020 Sustainability Report and Implementation Plan

Table of Contents

Executive Summary	1
Implementation Summary: Facility Management.....	3
1. FACILITY ENERGY EFFICIENCY.....	3
2. EFFICIENCY MEASURES, INVESTMENT, AND PERFORMANCE CONTRACTING	4
3. RENEWABLE ENERGY	4
4. WATER EFFICIENCY	5
5. HIGH PERFORMANCE SUSTAINABLE BUILDINGS	6
6. WASTE MANAGEMENT AND DIVERSION	7
Implementation Summary: Fleet Management	9
1. TRANSPORTATION / FLEET MANAGEMENT	9
Implementation Summary: Cross-Cutting Operations	11
1. SUSTAINABLE ACQUISITION / PROCUREMENT	11
2. ELECTRONICS STEWARDSHIP	12
3. GREENHOUSE GAS EMISSIONS.....	14

Tennessee Valley Authority

2020 Sustainability Report and Implementation Plan

Executive Summary

Overview

TVA submitted its first Sustainability Plan to the White House in June 2010. On May 17, 2018, President Trump issued Executive Order (EO) 13834 on Efficient Federal Operations. This Executive Order establishes a requirement for agencies to report on sustainability implementation. TVA continues with sustainable performance planning to ensure continuity of federal data, and to align sustainable performance with our core mission, with our customer-focused approach to business, and with the development of TVA's Corporate Sustainability Report.

Mission and Scope

The TVA Mission includes serving the Tennessee Valley through providing affordable and reliable energy, environmental stewardship and economic development. Achieving the EO 13834, EPLA 2005 and EISA 2007 goals directly supports the broader TVA Mission.

Sustainability focuses on environmental, economic and social criteria, aspects that are integral to TVA and its mission:

- ❖ The TVA Environmental Policy and commitment to cleaner energy correlates with the environmental aspect of sustainability. TVA efforts to manage natural resources responsibly, reduce emissions, increase use of renewable energy, all while providing affordable and reliable power, are central to this commitment.
- ❖ TVA's economic development commitment mirrors the economic aspect of sustainability through goals of increasing capital investment and attracting and retaining quality jobs for the people and businesses served by TVA.
- ❖ The TVA mission is supported by its' values, all of which reflect sustainability's social aspect: safety, diversity, integrity and respect, honest communication, accountability, teamwork, flexibility, and continuous improvement.

As the nation's largest public power provider, TVA safely delivers cleaner, reliable, affordable energy to 154 local power companies and 57 directly served customers. TVA employs about 10,000 people in the Tennessee Valley. TVA's service area, the area in which it sells power, is defined by the TVA Act. TVA supplies power in most of Tennessee, northern Alabama, northeastern Mississippi, and southwestern Kentucky and in portions of northern Georgia, western North Carolina, and southwestern Virginia, covering 80,000 square miles and serving nearly 10 million people.

TVA's transmission system interconnects with systems of surrounding utilities. The transmission system is approximately 2,500 circuit miles of 500 kilovolt, 11,700 circuit miles of 161 kilovolt, 2,000 circuit miles of other voltage transmission lines, and 3,500 miles of fiber. TVA has 510 transmission substations, power switchyards, and switching stations and 1,314 customer connection points (customer, generation, and interconnection).

TVA's power portfolio is dynamic and adaptable in the face of changing demands and regulations. Our emphasis has moved toward cleaner forms of power generation. Today, the power we deliver is more than 50 percent carbon-free. TVA efficiently delivered more than 158 billion kilowatt hours of electricity to customers from a power supply that was 39 percent nuclear, 20 percent natural gas, 17 percent coal-fired, 10 percent hydroelectric, 9 percent purchased power (non-renewable), and 5 percent purchased power (renewable). TVA's non-hydro renewable resources from TVA facilities are less than one percent. Purchased power (renewable) contains the majority of non-hydro renewable energy supply.

Tennessee Valley Authority

2020 Sustainability Report and Implementation Plan

Performance Highlights

- In FY 2019, TVA invested \$4.91 million on improvements resulting in \$542,500 in annual savings and 6,120 megawatt hour in energy consumption savings. Since 2008, TVA has reduced its own energy usage by nearly 733 GWhs, enough energy to power 50,000 average homes for a year. TVA's CO2 emissions savings from these improvements was 518,500 metric tons of CO2e, equivalent to reducing emissions from 110,100 passenger vehicles driven for one year.
- TVA is in the top quartile of both its regional and industry peers for clean energy generation, and we continue to strive to improve air quality.
- TVA carbon emissions are on track to be reduced 60% from 2005 levels by the end of 2020, and reduced 70% by 2030.
- TVA continues to beneficially use coal combustion residuals instead of landfilling the materials in order to help protect the environment.
- TVA returns 99.2% of the water it withdraws for thermoelectric power production back into the Tennessee River. 2nd quartile industry ranking for freshwater Consumption.

Leadership

TVA's implementation of the Sustainability Plan will be directed by the following key staff:

- Rebecca C. Tolene – TVA Vice President of Environment and TVA Chief Sustainability Officer
- Monte L. Matthews – TVA Senior Manager, Sustainability & Climate and TVA Deputy Chief Sustainability Officer
- Chris A. Azar – TVA Senior Program Manager, Internal Energy Management Program, EnergyRight® Solutions

TVA's Environment & Energy Policy group is the point of contact with the Office of Management and Budget, and the Council on Environmental Quality for sustainability reporting. TVA's Environment & Energy Policy group also leads TVA's Sustainability Program and governance structure, which includes subject matter experts (SMEs) and representatives from multiple business units working together and with TVA's Sustainability Program to provide leadership and focus for TVA's efforts. These staff comprise the TVA Sustainability Working Group.

The objective of TVA's Federal Sustainability Program is to reduce the non-power block component of the TVA environmental footprint as a federal agency. The program achieves this objective by issuing and maintaining the TVA Sustainability Report, increasing awareness and engaging employees on sustainability, and implementing actions to reduce TVA's internal environmental footprint through cross-organizational collaboration.

Agency Priorities

- **EISA 2007 Energy and Water Surveys/Projects**
TVA plans to continue to evaluate facilities to identify potential energy and water conservation measures. In addition, TVA plans to continue implementation of cost-effective energy and water saving projects in both goal subject and excluded buildings based on funding availability.
- **Electric and Zero Emission Vehicles**
TVA continues to follow progress in EV technology and has established a cross-functional team to develop a best case recommendation for the deployment of ZEV/PHEV vehicles and the associated charging infrastructure. Recommendations have been presented to TVA management for guidance and funding.
- **Resilience and Preparedness**
TVA will continue to update its Statement on Climate Change, Adaptation Plan and High Level Vulnerability Assessment consistent with the Third National Climate Assessment and EO 13783 related guidance.

Tennessee Valley Authority
2020 Sustainability Report and Implementation Plan

Implementation Summary: Facility Management

1. FACILITY ENERGY EFFICIENCY

FY 2019 Energy Intensity Progress (Btu/GSF):

64.3% reduction from FY03

4.6% reduction from FY18

FY 2020-FY 2021 Plan:

2.7 - 4.7% reduction in FY20 from FY19

2.7 - 5.0% reduction in FY21 from FY20

TVA's strategy and approach to reduce energy consumption and increase energy efficiency is to continue to evaluate facilities to identify potential energy conservation measures as required by EPCAct05 and EISA 2007. TVA plans to implement energy savings projects that consist of bundled cost-effective energy conservation measures.

Implementation Status

TVA finished FY 2019 with a 64.3% reduction in energy intensity from a FY 2003 baseline. In FY 2019, TVA had a large reduction in its energy intensity due to taking credit for measured energy savings at goal excluded facilities. At TVA a goal excluded facility is any facility that is used to generate, transmit and control power or connected to one that does. Goal excluded buildings are exempt from the energy intensity goal, but agencies are given a credit when verified energy efficiency improvements are implemented. In these goal excluded facilities the primary energy conservation measure (ECM) implemented is lighting. If this credit were not taken, TVA would have had a 36.6% reduction in energy intensity from a FY 2003 baseline.

TVA's Internal Energy Management Program (IEMP) role is to identify, fund, implement, and track energy and water conservation projects at TVA's facilities. To accomplish reducing energy and water at TVA buildings, IEMP staff conducts EISA 2007 energy and water surveys. During FY 2019, TVA surveyed 7 covered facilities accounting for ~2.8 million square feet. Cost-effective ECMs identified during the surveys are bundled into projects. After the projects are implemented, IEMP documents the savings. In FY 2019, TVA invested \$4.9M on improvements resulting in \$542,500 in annual savings and 6,120 MWh in energy consumption savings at its facilities.

Priority Strategies & Planned Actions

In FY 2020 and FY 2021, TVA plans to continue to evaluate facilities to identify potential energy and water conservation measures as required by EPCAct05 and EISA 2007. In order to meet the energy intensity reduction, TVA plans to continue implementation of cost-effective energy saving projects in both goal subject and excluded buildings based on funding availability. These projects, which primarily include lighting, controls and HVAC improvements, are estimated to result in \$222,800 in annual savings and 2,600 MWh in energy consumption savings at its facilities each fiscal year. TVA plans to continue to install and monitor energy meters per latest metering plan. Lastly, TVA plans to continue to track and monitor building energy usage to identify buildings that may have high-energy usage as compared to year over year and month over month analysis. Measures to reduce the high-energy usage would then be taken.

Tennessee Valley Authority
2020 Sustainability Report and Implementation Plan

2. EFFICIENCY MEASURES, INVESTMENT, AND PERFORMANCE CONTRACTING

FY 2019 Performance Contracting – Investment value and number of new projects awarded:

\$4.9M / 62 projects in FY19 (self-funded projects)

FY 2020-FY 2021 Plan:

\$2.5M / 20-40 projects in FY20 (self-funded-projects)

\$2.5M / 20-40 projects in FY21 (self-funded-projects)

TVA's strategy and approach is to self-fund its improvements. TVA, as an energy provider, has its own Federal Energy Services Program that provides Utility Energy Service Contracts (UESC) to Federal direct serve and Federal non-direct serve customers in its region at special request by the local power distributor. TVA can most cost effectively implement these services by acting as its own UESC.

Implementation Status

TVA has self-funded projects totaling \$4.9M in FY 2019, which has exceeded the commitment of \$2.5M. These projects included replacing/retrofitting inefficient lighting with more efficient LED lighting, replacing old/inefficient HVAC with more efficient HVAC, and adding/upgrading lighting and HVAC controls. These projects resulted in \$542,500 in annual savings and 6,120 MWh in energy consumption savings at its facilities. TVA met its commitment through the implementation of projects identified by its energy, water and sustainability surveys.

Priority Strategies & Planned Actions

TVA is setting a target to implement projects totaling \$2.5M for FY 2020 and \$2.5M for FY 2021 for a total investment of \$5.0M. TVA as a provider of utility based ESPCs will continue to self-fund its own energy, water and sustainability projects. These projects are estimated to result in \$222,800 in annual savings and 2,600 MWh in energy consumption savings each fiscal year.

3. RENEWABLE ENERGY

FY 2019 Renewable Electricity Use:

18.3% of total electricity in FY19

FY 2020-FY 2021 Plan:

18.25 - 18.75% of total electricity in FY20

18.5 - 19.0% of total electricity in FY21

TVA's strategy and approach to maintaining its current renewable energy progress is to continue to utilize hydroelectric modifications (HMODs) at its hydroelectric plants. In addition, TVA plans to continue purchasing renewable energy certificates (RECs) at its two large office buildings.

Implementation Status

TVA finished FY 2019 with its renewable energy usage as a percentage of total electricity at 18.3%. TVA utilized HMODs at its hydroelectric plants to meet the renewable energy goal. HMODs accounted for 65,088 MWh or 86% of

Tennessee Valley Authority 2020 Sustainability Report and Implementation Plan

the total renewable energy use. HMODs increase the amount of energy generated by the turbine, by increasing the turbine's efficiency. For this goal, the additional energy is considered to be renewable energy that is generated and used onsite by TVA buildings. TVA also purchased RECs totaling 10,275 MWh or 14% of the total renewable energy use for its two large office buildings through local power companies, which participate in TVA's Green Power Switch and Southeastern RECs program.

Priority Strategies & Planned Actions

In FY 2020 and FY 2021, TVA plans to maintain its current progress by continuing to utilize HMODs at its hydroelectric plants. TVA also plans to maintain the purchase of RECs at its two large office buildings.

4. WATER EFFICIENCY

FY 2019 Water Intensity Progress (Gal/GSF):

36.9% reduction from FY07

7.7% reduction from FY18

FY 2020-FY 2021 Plan:

0.5 - 0.75% reduction in FY20 from FY19

0.5 - 0.75% reduction in FY21 from FY20

TVA's strategy and approach to improve water efficiency and reduce potable water consumption includes continuing to identify and implement cost-effective water conservation measures as part of the EISA surveys. To reduce non-potable water consumption, TVA plans continue to convert wet storage of coal fly ash storage to dry storage at its coal-fired plants and to retire coal-fired plants. Storm water management requirements continue to be included as part of any new construction projects.

Implementation Status

TVA finished FY 2019 with a 36.9% potable water reduction in Gal/GSF compared to its FY 2007 baseline. The reduction in FY 2019 was driven by decreased water usage associated with plant closures and by detection and repair of water leaks. TVA has implemented the following strategies in order to improve water efficiency, reduce potable and non-potable water consumption, and manage storm water.

To improve water efficiency and reduce potable water consumption TVA has continued to conduct water surveys at multiple TVA sites covering ~2.8 million square feet to help identify opportunities to reduce water consumption. Additionally, we have a Strategic Real Estate & Governance Team at TVA that identifies opportunities to right-size the company's real estate portfolio and divest of unused property to better serve local communities. As part of the planning process, all TVA real estate is being reviewed with a primary focus on buildings with low occupancy, underutilization and poor asset condition. As we reduce our total building square footage, it may affect our future Gal/GSF results. As a result, TVA is looking at projects that will further reduce its water usage. In addition, TVA's potable water use could fluctuate due to its aging water infrastructure that is prone to leaking.

To reduce non-potable water consumption, TVA has continued to convert wet storage of coal fly ash storage to dry storage at its coal-fired plants and to retire coal-fired plants. Historically, TVA utilized non-potable water to sluice ash to settling ponds. With the ongoing projects to convert to dry ash handling the practice of sluicing of fly ash has been eliminated and the ash is transported by air, vacuum or mechanically, which eliminates the need for non-potable

Tennessee Valley Authority 2020 Sustainability Report and Implementation Plan

water. The movement away from wet storage coal fly ash systems will significantly reduce the overall use of non-potable water in TVA power generation facilities.

Lastly, stormwater management requirements are included as part of any new construction projects.

Priority Strategies & Planned Actions

In FY 2020 and FY 2021, TVA plans to continue to identify and repair water leaks through visual identification and through water bill analysis; conduct EISA surveys to identify and implement cost effective building improvements that will reduce facility water consumption; and reduce non-potable water consumption through conversion of wet fly ash storage to dry storage and plant retirements. Lastly, areas where potable water use can be converted to non-potable water sources will continue to be identified.

5. HIGH PERFORMANCE SUSTAINABLE BUILDINGS

FY 2019 Sustainable Buildings Progress:

28 sustainable Federal buildings
13.9% of buildings / 22.0% of gross square footage (GSF)

FY 2020-FY 2021 Plan:

22.0% - 22.1% of gross square footage (GSF) in FY20
22.0% - 22.2% of gross square footage (GSF) in FY21

TVA's strategy and approach to make Guiding Principles for Sustainable Federal Buildings (GP) improvements to its existing buildings include continuing to complete GP improvements that were previously underway. In addition, TVA plans to continue to review all new building designs and major renovations for incorporation of the new GPs.

Implementation Status

TVA finished FY 2019 at 22% (based on gross square feet) for buildings meeting the Guiding Principles for Sustainable Federal Buildings (GP). TVA finished applying the GPs to its Chattanooga Office Complex in FY 2019, which raised the GSF percentage meeting the GPs by 16.9%. TVA continues to apply the GPs to its Knoxville Office Complex. To date, 85% of the GPs have been completed at the Knoxville Office Complex. TVA is currently anticipating parts of the Knoxville Office Complex to undergo renovation, which will be a multi-year effort. TVA has continued to incorporate sustainable design criteria into major renovation and new construction efforts. As part of TVA's Strategic Real Estate Plan, TVA reviews its building inventory in an effort to reduce inefficient, high cost, underutilized space. This consolidation effort provides an opportunity to further practice sustainable efforts such as:

- Renovate space using removable, reusable wall systems;
- Recycle and recondition office furniture and panel systems;
- Install recyclable carpet tiles, low VOC finishes and bio-based materials;
- Upgrade lighting systems using LED lighting including occupancy sensors; and
- Install personal workstation occupancy sensors to control plug load.

Tennessee Valley Authority
2020 Sustainability Report and Implementation Plan

Priority Strategies & Planned Actions

In FY 2020 and FY 2021, TVA plans to continue completing GP projects that were previously underway and achieving compliance on 1-2 buildings per year or 10,000 to 20,000 GSF in building space. TVA plans to continue using the Energy Star Portfolio Manager Sustainable Checklist, the FEMP Excel based checklist to track GPs progress for existing buildings and its own internal database (Tririga) to track building energy/water use. TVA will continue to review all new building designs and major renovations for incorporation of the new GPs if the building is greater than or equal to 10,000 square feet. TVA plans to budget for implementing GPs at new and existing buildings through its annual business planning process.

6. WASTE MANAGEMENT AND DIVERSION

FY 2019 Non-hazardous Waste Management and Diversion:

11,988 metric tons of non-hazardous solid waste generated*
4.5% diverted and 95.5% sent to treatment and disposal facilities

FY 2020-FY 2021 Plan:

1.0% - 3.0% reduction in non-hazardous solid waste generated in FY20 from FY19
4.7% - 4.9% diverted and 95.3% - 95.1% sent to treatment and disposal facilities in FY20

1.0% - 3.0% reduction in non-hazardous solid waste generated in FY21 from FY20
4.9% - 5.3% diverted and 95.1% - 94.7% sent to treatment and disposal facilities in FY21

**not including construction and demolition waste*

TVA's strategy and approach to implement waste prevention and recycling measures, including reducing hazardous and non-hazardous waste generation, and increasing waste diversion includes reducing our waste footprint at all TVA facilities by decreasing waste generation and improving recycling. At TVA, we are dedicated to ensuring safe, long-term storage and sustainable management of the waste produced by our operations.

Implementation Status

In FY 2019, TVA reported 11,988 metric tons of non-hazardous Municipal Solid Waste (MSW) of which 543 metric tons were recycled for a 4.5% diversion rate. TVA has continued to maintain its recycling at its facilities through working with its contracted waste management company. Historically TVA has simply purchased waste disposal services. This entailed merely selecting a vendor to provide containers to remove trash, construction debris, recyclables and/or special waste. Under this approach, TVA has not been able to divert as much waste from landfills, increase recycling and/or reuse of goods, nor cut spending on waste disposal services.

Priority Strategies & Planned Actions

TVA plans to reduce spending, increase recycling and annually divert solid waste from landfills by working with the site generators and waste contractors. TVA also expects to continue to see a source reduction in waste through its plans to retire coal plants, which typically generate large amounts of non-hazardous waste. TVA will continue to implement HFC management training as part of its Technical Training Programs. Measures will be taken to ensure

Tennessee Valley Authority 2020 Sustainability Report and Implementation Plan

recycling equipment/contracted services are available at appropriate locations. TVA plans to accomplish this by doing the following:

- Being informed – Tracking waste and supporting recycling is fundamental to waste reduction. TVA employees will have more knowledge and understanding about the kinds of waste produced at the various sites. This will help employees to better manage TVA’s disposal costs and determine the appropriate ways to recycle.
- Becoming more Sustainable – The way we manage our waste will directly affect our environmental sustainability. For TVA, improving sustainability means complying with Executive Order (EO) 13834 on Efficient Operations. This EO instructs federal agencies to cut waste. Moreover, TVA’s mission includes serving the valley by providing environmental stewardship.
- Reducing costs and preserving resources – Informing our employees about the specific waste streams will enable TVA to save money on disposal costs and; preserve resources by recycling and reusing natural resources such as lumber and metal. Additionally, by better managing our waste and actively recycling we will conserve the environment by not emitting large quantities of greenhouse gases.

TVA is Engaged and Partnering up. This means that we are building teams who will manage the designs, plans and implementation of waste management activities. Partners will come from various areas throughout our organization. This partnership will be broad enough to represent our entire organization, provide myriad of ideas, innovative solutions and continuous improvement. Specifically in conjunction with our waste disposal vendors, the partnership will:

- Identify organizational goals/needs that will enable the partnership to establish short and long term goals;
- Research and review information pertinent to designing, planning and implementation;
- Communicate the importance of managing waste, reducing waste and increasing recycling;
- Encourage, engage and incentivize employee participation through education, surveys, and award programs;
- Provide reports to management and the organization at large;
- Monitor progress.

Tennessee Valley Authority
2020 Sustainability Report and Implementation Plan

Implementation Summary: Fleet Management

1. TRANSPORTATION / FLEET MANAGEMENT

FY 2019 Petroleum Reduction Progress (Gal):

28.4% reduction in petroleum fuel since 2005
13% reduction in petroleum fuel since FY18

FY 2019 Alternative Fuel Use Progress (Gal):

27,360.6% increase in alt fuel since 2005
53.7% decrease in alt fuel since FY18

FY 2020-FY 2021 Plan:

2.5% reduction in FY20 from FY19
2.5% reduction in FY21 from FY20

FY 2020-FY 2021 Plan:

2.0% increase in FY20 from FY19
2.0% increase in FY21 from FY20

TVA’s strategy and approach to improve fleet efficiency includes continuing to focus on removing underutilized vehicles and continuing to grow the “Valley-Ride” program, which promotes vehicle sharing. In addition, TVA plans to continue to increase acquisitions of GHG compliant vehicles, plug-in hybrid vehicles and EV’s (electric vehicles) when commercially available and they meet the intended mission.

Implementation Status

TVA’s fleet is comprised of roughly 2460 vehicles. The quantity and vehicle type is determined by the operational needs of the individual business units. This is done through a joint effort between Fleet Management, the operational user and business unit upper management. TVA’s Fleet Management team utilizes a diverse inventory of light and medium-duty assets ranging from sedans to 1 1/2 ton trucks to support the company’s mission. All of TVA’s medium-duty assets are utilized for mission critical work, as well as some of the light-duty assets.

Finding vehicles that meet TVA’s functional needs and are alternative fueled and or low-GHG emissions compliant can sometimes prove to be difficult. In past situations, cost was the overriding factor in determining which vehicle would be most beneficial to TVA. To address this issue, vehicles with a GVWR (Gross Vehicle Weight Rating) greater than 8,500 pounds carry an exemption from the DOE. This exemption allowed TVA to exclude medium and heavy duty vehicles from the fleet goal since they are larger vehicles used for mission critical operations. There are not alternative fuel or low-GHG emission compliant vehicles that can perform the same mission. However, TVA still operates smaller trucks, vans, and SUV’s that play a significant role in supporting mission-critical activities. TVA will initially seek to purchase low GHG-emitting vehicles before purchasing a noncompliant vehicle. While additional focus will also be placed on reductions in petroleum consumption and travel, these practices cannot be applied to all vehicles currently classified as non-exempt.

- TVA’s Fleet Services has made an effort to focus on underutilized vehicles over the past few years, specifically sedans and SUV’s (travel type vehicles). We have continued to monitor our utilization since our rightsizing event and have set internal metrics to help keep us on track.
- Another initiative that was implemented last year was TVA’s new automated rental pool system called “Valley Ride”. This new standalone system was made possible by the Smart track system, which has provided an automated key box. This has given TVA the opportunity to provide vehicles for TVA’s various business units without having someone there to hand out keys. What this system has also done is provided us with the opportunity to maximize our utilization on our owned asserts. Before our temporary shut down due to the COVID 19 virus we had a 90% utilization rate between Monday – Thursday for theses pooled vehicles. TVA plans to continue to roll this out in a larger scale when we resume business as usual.

Tennessee Valley Authority 2020 Sustainability Report and Implementation Plan

- As a result of last year's data verification initiative, specifically in related to our FMIS (Fleet Management Information System), TVA noticed a few areas that would see some change in the FY19 report. One of the main changes TVA discovered was the use of Alternative fuel. Before 2019, any flex fueled vehicle coded with the word ethanol was classified E85. Starting in 2019, TVA decided to narrow interpretation of E85 fuel to only alternative fuel that was solely specified E85. The second part of this equation was the purchase of either hybrid, electric or GHG compliant vehicles to replace their flex fuel counterparts. Between FY18 and FY19 TVA transferred roughly 25% of our sedans and SUV's fleet into the aforementioned vehicle types. The combination of the shift in purchasing and the fuel data purge has resulted in this sharp decrease in E85 use. TVA fully expect for next year's data will reflect the changes that have been made over the past few years while also showing a stabilization of this new baseline.
- TVA's service territory requires employees to travel to urban and very rural areas on average 2,000 miles more annually than utility industry peers. The availability of GHG compliant vehicles to support TVA's mission and the geographic coverage area affects TVA's opportunity to improve performance in this area. Fueling options in rural areas are limited. Miscoded E85 fuel transactions by retail suppliers continue to influence the accuracy of reporting. TVA will continue to purchase alternative fuel vehicles that meet core mission requirements when available. The most cost-effective and fuel-efficient options will influence the vehicle types purchased. The fulfillment of the Fleet Alternative Fuel Consumption Goal is dependent upon the availability of product and funding.

Priority Strategies & Planned Actions

In FY 2020 and FY 2021, TVA plans to do the following:

- Increase acquisitions of zero emission and plug-in hybrid vehicles. Zero emission vehicles will be purchased if commercially available and meets the intended mission.
- Issue agency plan to install appropriate charging or refueling infrastructure for zero emission or plug-in hybrid vehicles and opportunities for ancillary services to support vehicle-to-grid technology.
- Increase utilization of alternative fuel in dual-fuel vehicles.
- Use a FMIS to track real-time fuel consumption throughout the year for agency-owned vehicles.
- Minimize use of law enforcement exemptions by implementing GSA Bulletin FMR B-33, Motor Vehicle Management, and Alternative Fuel Vehicle Guidance for Law Enforcement and Emergency Vehicle Fleets.

Tennessee Valley Authority
2020 Sustainability Report and Implementation Plan

Implementation Summary: Cross-Cutting Operations

1. SUSTAINABLE ACQUISITION / PROCUREMENT

FY 2019 Sustainable Acquisition Progress:

86.0% of contract actions and 93.7% of obligations (in dollars), for a total of \$11.8M in contract actions with statutory environmental requirements

FY 2020-FY 2021 Plan:

1.0% increase of contract actions and 1.0% increase of obligations (in dollars)

0.0% increase of contract actions and 0.0% increase of obligations (in dollars)

TVA's sustainable acquisition strategy for FY 2020 continues to focus on review and update of TVA policies, programs and standard terms and conditions in our purchase request and contracting processes. This includes ensuring bio-based, energy efficient products, Energy Star, EPEAT-registered electronic products, recycled content, water efficient products, products containing alternatives to ozone depleting substances, products containing no or low toxic constituents, and other environmentally preferable products or services are procured in alignment with federal and agency goals.

Implementation Status

In FY 2020, the percentage of Sustainable Acquisition achieved for the First Quarter FY 2020 was 80% with an increase for the Second Quarter to 92%, as calculated by TVA's methodology. TVA's methodology is based on green codes identified on purchase order lines issued in TVA's purchasing system of record. Green codes indicate that the product or service is eligible be bio-based, energy efficient products, Energy Star, EPEAT-registered electronic products, recycled content, water efficient products, products containing alternatives to ozone depleting substances, products containing no or low toxic constituents, or another environmentally preferable products or services. The numbers reported indicate that of those in which a sustainable option is available, the sustainable option was purchased. Bio-based purchases for FY20 1st and 2nd quarters are 56% and 68% respectively. TVA continues to review Request for Proposal and Request for Quote processes to ensure inclusion of contract clauses, which provide for and promote bio-based and other designated green product purchases. Bio-based purchases for FY19 were compliant for 60% (average for the FY) of all applicable bio-based purchases. Applicable purchases means the item purchased is available in a bio-based option. TVA's achievement of 60% bio-based purchases surpasses established target of 50% of contracts in products to be delivered. TVA reviews applicable standard terms and conditions annually.

TVA Supply Chain sustainable purchases will be challenged by the unprecedented actions occurring due the COVID-19 pandemic. There are so many unknowns at this point it is difficult to predict how all purchasing, including green products, will be affected. There may also be challenges involving the availability of green products.

Priority Strategies & Planned Actions

TVA will continue to review and provide necessary updates to procurement policies, programs, and standard terms and conditions to ensure purchases provide for federally mandated sustainable products in all relevant contracts where appropriate and practical. TVA will continue to promote the inclusion of Bio-based, other designated green products, and sustainability clauses where appropriate and practical in Request for Proposals and Request for Quotes. TVA will conduct performance reviews for key suppliers where appropriate and practical.

Tennessee Valley Authority

2020 Sustainability Report and Implementation Plan

TVA projects the following for FY 2020 and FY 2021:

- Projected Progress for FY 2020: 1% increase in contracts & contract dollars w/environmental clauses from prior year.¹
- Projected Progress for FY 2021: maintain previous level of contracts & contract dollars w/environmental clauses to FY20 including 400 Bio-based contract actions at an estimated dollar value of \$1.2M.¹

2. ELECTRONICS STEWARDSHIP

FY 2019 Electronics Stewardship Progress:

95% of newly purchased or leased equipment met energy efficiency requirements

100% of electronic equipment disposed using environmentally sound methods*

**Reuse, donation, recycling, transfer, sale, or demanufacturing.*

TVA's strategy and approach to acquire and manage electronic equipment to promote energy efficiency and environmental stewardship includes procuring more efficient sustainable technologies that align with the statutory requirements on a more frequent basis. In addition, TVA plans to continue to manage disposal of surplus electronics with certified recyclers and look for opportunities for process improvement.

Implementation Status

TVA IT continues to ensure that IT procurement is focused on devices with optimized levels of energy-efficiency. TVA focuses on procuring devices which are able to be managed with intelligent power management policies and ensures that PCs are configured with the most power conscious components which meet TVA's business requirements. TVA also continues to ensure that all electronic equipment is re-marketed or recycled in environmentally sound methods.

TVA's current status is detailed below:

- When available, TVA only acquires Energy Star registered electronics.
- TVA continues to procure Solid State storage in all laptops and desktops, which are more power efficient than traditional spinning hard drives.
- All eligible display devices are currently being managed for power settings through Microsoft Group Policy Objects and those that must be exempted have unique policies applied. This ensures low power consumption when the PC or monitor is not being used.
- All TVA networked Printers and Multifunction Devices are configured with a centrally managed power management policy.
- Smaller site data centers are being evaluated for improvements; however, efforts for cost control and also site specific limitations will affect how many data center locations can achieve the <1.5 PUE. Operational requirements will continue to override other considerations.

¹ Dependent upon supply chain effects of COVID-19.

Tennessee Valley Authority
2020 Sustainability Report and Implementation Plan

Priority Strategies & Planned Actions

TVA plans to do the following:

- TVA has shifted solely to Solid State storage in laptop and desktop PCs. This shift is resulting in reduced energy consumption. TVA will continue to explore the right balance of power efficiency and performance in end user hardware.
- TVA will continue to utilize Intel's "U" series of mobile processors where operationally viable to further reduce power consumption. Further opportunities for power saving hardware are continuing to be evaluated.
- TVA has transitioned to a 36 month PC Lifecycle which ensure old technology is refreshed with more sustainable technology on a more frequent basis.
- TVA continues to lifecycle printers on a 4 year basis to ensure old technology is refreshed with more sustainable technology on a scheduled basis.
- TVA will continue to manage disposal of surplus electronics with certified recyclers, and we continue to monitor electronic equipment surplus process to look for additional opportunities for process improvement.
- TVA IT plans to continue to ensure statutory energy efficient product procurement requirements are met when acquiring new electronics.

Tennessee Valley Authority
2020 Sustainability Report and Implementation Plan

3. GREENHOUSE GAS EMISSIONS

FY 2019 Scope 1&2 Greenhouse Gas (GHG) Emissions:

41.6% reduction from FY 2008

1.0% reduction from FY 2018

TVA's strategy and approach for reducing GHG emissions includes continuing to show progress in other goal areas that translates into GHG emissions reductions. For Scope 1 & 2 GHG emissions, TVA expects to continue to show progress through continued implementation of energy efficiency projects, lower vehicle fleet usage, and cleaner generation power system. For Scope 3 GHG emissions, TVA expects to continue to show progress through reducing transmission and distribution losses and reduced employee business travel.

Implementation Status

TVA finished FY 2019 with a 41.6% reduction in Scope 1 & 2 GHG emissions over the FY 2008 baseline inventory. TVA Scope 1 and 2 GHG emissions showed a reduction primarily due to continued implementation of energy efficiency projects, lower vehicle fleet usage, and a cleaner generation power system that resulted in a lower CO₂ emission rates. In addition, TVA has been reviewing its building inventory and has improved the accuracy of the inventory. These efforts resulted in a 1.0% reduction in Scope 1 and 2 GHG emissions from FY 2018.

TVA continues to track its Scope 3 GHG emissions. TVA finished FY 2019 with a 32.0% reduction over the 2008 baseline inventory. In FY 2019, TVA continued to show progress towards meeting its Scope 3 target through a number of ways, which include reducing transmission and distribution losses, employee business travel and municipal solid waste. These efforts resulted in a 3.41% reduction in Scope 3 GHG emissions from FY 2018.

Priority Strategies & Planned Actions

In FY 2020 and FY 2021, TVA plans to focus on the following. For Scope 1 and 2 GHG emissions related to buildings, TVA plans to continue EISA 2007 and goal-subject energy/water surveys and project upgrades to reduce GHG emissions. For Scope 1 GHG emissions related to vehicles, TVA will continue to reduce petroleum use in fleet vehicles by reducing the miles traveled, increasing utilization of alternative fuel, and optimizing its vehicle fleet size. For Scope 3 GHG emissions, TVA plans to continue voluntarily tracking Scope 3 GHG emissions data and is conducting a workplace flexibility pilot in one of its Business Units, which will allow employees to telework more frequently and reduce employee commuting emissions. The impact of COVID-19 will also likely reduce employee business travel through 2021.