

## WVOE CPRG BUDGET NARRATIVE

### a. Budget Detail

#### EFFICIENCY IMPROVEMENTS IN EXISTING FOSSIL FUEL-FIRED POWER PLANTS PROGRAM

i.	<u>Personnel</u>	\$629,922
ii.	<u>Fringe Benefits</u>	\$220,473
iii.	<u>Travel</u>	\$52,950
iv.	<u>Equipment</u>	\$ -
v.	<u>Supplies</u>	\$ -
vi.	<u>Contractual</u>	\$ -
vii.	<u>Other</u>	\$172,500,000
viii.	<u>Indirect Charges</u>	\$ -
	<b>TOTAL</b>	<b>\$173,402,445</b>

#### PERSONNEL:

Program Manager: Oversees all administrative and operational functions of the CPRG award. Supervises CPRG program staff and provides support functions when necessary. Directly manages the Efficiency Improvements to Power Plants program and oversees programs executed through subgrantees, including the CPRG Workforce Development Program. Conducts quality control reviews of funded projects, including on-site compliance, monitoring visits, and program inspections. Makes presentations about the program to various stakeholder groups. Reviews and approves all required reports. \$60,000/year FTE for 5 years, 5% annual cost of living adjustment.

Program Coordinator: Assists the PM in execution of the Implementation Grant through careful record keeping and data collection on program outputs and outcomes; coordinates site monitoring and program evaluation activities; authorizes all grant/award and payment documents; liaises with subgrantees and project stakeholders. \$45,000/year FTE for 5 years, 5% annual cost of living adjustment.

#### FRINGE:

Includes taxes, medical insurance, retirement and other non-salary expenses estimated as a percentage of salary. The rate for West Virginia Department of Economic Development Fringe Benefits is 35%.

Program Manager: 35% of \$60,000/year for 5 years, 5% annual cost of living adjustment = \$133,444

Program Coordinator: 35% of \$45,000/year for 5 years, 5% annual cost of living adjustment = \$87,029

#### TRAVEL:

Includes costs for mileage, vehicle rental, air fare, meals, and lodging necessary to implement the program and to oversee projects. Costs are estimated annually for staff travel to meetings, conferences, and project site visits. "Staff travel" may include travel expenses supporting attendance at CPRG national or regional meetings, training pertinent to CPRG program or project implementation (such as, but not limited to, training sessions, university or college workshop/courses), and other CPRG meetings held regionally or within the state.

Travel for 2 FTE staff to attend Professional Development Workshops	Cost Per Year	Total Cost
Airfare: 2 @ \$600 round trip	\$1,200	\$6,000
Per Diem: 2 staff x 4 days @ \$60/day	\$480	\$4800

Hotel: 2 staff x 3 nights @ \$250/night	\$1,500	\$7,500
In-State Conference & Outreach		
Hotel: 2 staff x 2 nights @ \$200/night	\$800	\$4,000
Per Diem: 2 staff x 3 days @ \$60/day	\$360	\$1,800
Registration Fees for Training Events: 2 staff x 4 events @ \$500/event	\$2000	\$10,000
Total		\$34,100

**OTHER:**

Efficiency Upgrade Grants to Coal-Fired Power Plants: Project funds will be used for grants to utilities, in service of program objectives. Program funds will be prioritized for projects based on magnitude of GHG emissions reductions, scope of impact (fleet wide vs, single site), and cost of reductions per ton. Includes a \$2.5M set-aside (\$500K/year) for projects to support community engagement activities. Total is \$172,500,000.

**TOTAL:**

\$173,402,445

**DOMINION SMALL MODULAR NUCLEAR REACTOR PROJECT**

- ix. Personnel \$25,926,351
- x. Fringe Benefits
- xi. Travel
- xii. Equipment
- xiii. Supplies
- xiv. Contractual \$120,230,606
- xv. Other
- xvi. Indirect Charges

**PERSONNEL (including FRINGE):**

Business Development - FTE's 1/2/2/2/2

\$225,000 \$520,000 \$530,400 \$541,008 \$551,828 = \$2,368,236

Project Construction - Management - FTE's .25/.5/.5/.5/1.5

\$80,000 \$163,200 \$166,464 \$169,793 \$432,973 = \$1,012,430

Project Construction - PM - FTE's .5/1/1/1/1

\$160,000 \$265,200 \$270,504 \$275,914 \$281,432 = \$1,253,050

Project Construction - Engineering - FTE's .25/1/1/1/1

\$80,000 \$265,200 \$270,504 \$275,914 \$281,432 = \$1,173,050

Project Construction - Controls - FTE's .25/.75/2/2/2

\$50,000 \$183,600 \$468,180 \$477,544 \$487,094 = \$1,666,418

Nuclear SMR - Management - FTE's 1/2/2/2/2

\$260,000 \$530,400 \$541,008 \$551,828 \$562,865 = \$2,446,101

Nuclear SMR - Licensing - FTE's .5/2/2/2/2

\$130,000 \$530,400 \$541,008 \$551,828 \$562,865 = \$2,316,101

Nuclear SMR - Environmental - FTE's .5/2/2/2/2

\$130,000 \$530,400 \$541,008 \$551,828 \$562,865 = \$2,316,101

Nuclear SMR - Engineering - FTE's 2/4/4/4/4

\$500,000 \$1,060,800 \$1,082,016 \$1,103,656 \$1,125,729 = \$4,872,202

Nuclear SMR - Programs - FTE's 0/1/1/1/1

\$0 \$265,200 \$270,504 \$275,914 \$281,432 = \$1,093,050

Nuclear SMR - QA - FTE's 0/1/1/1/1

\$0 \$265,200 \$270,504 \$275,914 \$281,432 = \$1,093,050

Nuclear SMR - Document Control - FTE's 0/1/1/1/2

\$130,000 \$132,600 \$135,252 \$275,914 = \$673,766

Misc Corp Support - FTE's 0/2/2/2/2

\$408,000 \$416,160 \$424,483 \$432,973 = \$1,681,616

Legal - In-house - FTE's .4/.75/1.5/2/2

\$100,000 \$224,400 \$457,776 \$583,664 = \$595,338

Total: = \$25,926,351

**CONTRACTUAL**

Site Characterization and Suitability study: \$150,000

- Performed by the contracted Owner's Engineer. This study provides a detailed review and analysis of select, high impact nuclear reactor siting considerations. The scope of this study does not go into as much detail as would be required for a full permit application. However, the level of detail and the selection of high impact considerations are scoped to provide reasonable assurance of the site's ability to receive regulatory approval for a nuclear reactor.

Water resource study (initial and follow-on): \$100,000

- Contracted to an engineering firm specializing in geology and hydrology. The initial study examines potential water sources and quantifies the resource. The follow-on study is scoped to examine potential solutions to utilize the water resource at the specific location of the SMR site.

Installation of Meteorological Tower: \$500,000

- Contracted to qualified vendor. Site meteorological data is required as part of any NRC permit application. There are specific regulatory requirements on the design of the meteorological tower. The estimated cost includes installation of the tower as well as data monitoring and collection for the required NRC time period.

Installation of groundwater wells and geotechnical investigations: \$5,600,000

- Contracted to qualified vendor. Similar to meteorological data, ground water sampling data is required as part of any NRC permit application. Core boring is required for geotechnical investigations that is also an NRC requirement. The estimated cost includes drilling all core borings for the geotechnical investigation, drilling all wells, and sampling/monitoring the wells for the required NRC time period.

Detailed site diligence and NRC application preparation: \$12,500,000

- Contracted to the Owner's Engineer who will sub-contract the survey work. In addition to the data gathered by the meteorological tower, groundwater wells, and geotechnical investigations, the work under this specific line item provides the balance of technical data required for an NRC permit application. The estimated cost also includes the Owner's Engineer cost to compile all the data into the appropriate format for an NRC permit application. The list of required surveys follows:

- o Ecological Surveys (aquatic and terrestrial, at least 1 year of surveys)
- o Surface water quality sampling and analysis (at least 1 year of surveys)
- o Wetland delineation and jurisdictional determination
- o Cultural resources Phase 1 archeological survey; cultural resources historical properties survey
- o Phase 1 Environmental Site Assessment
- o Background noise survey

Federal Regulatory Review Fees (NRC) and Associated Costs: \$20,400,000

- This is cost paid to the NRC for various meetings and reviews. The NRC will review and approve a Quality Assurance Program in Year 1. There will be regular interim meetings for the duration of the Project to review various environmental reports or engineering products. The largest contribution to this cost is an estimated \$20,000,000 for the permit application review. This estimate is based off of industry lessons learned and best practices from Tennessee Valley Authority's experience obtaining an Early Site Permit Application in 2019, as well as DEV's own experience obtaining an Early Site Permit in 2007.

PJM interconnection study process: \$70,000,000

- This is cost paid to PJM to enter the interconnection study process and continue through the decision gates to obtain an Interconnection Service Agreement (ISAs). In accordance with PJMs governing tariff which is approved and filed at the Federal Energy Regulatory Commission, the interconnection process follows a very prescribed schedule with associated payments based on the expected total network upgrade cost. The process includes an initial payment to enter the process, and three decision points each with a cost required to continue in the process if desired. The estimated cost on this line item is based off previous industry experience obtaining ISAs for other power generation projects.

Community benefits plan consultant: \$200,000

- This is cost paid to a CBP consultant. The consultant will provide experience, expertise, and familiarity with the local WV community to develop a strategy to engage the community and promote a just transition to clean nuclear energy for the workforce as well as for the WV community.

Site access (construction roads): \$10,000,000

- This is cost paid to a contractor to design and construct construction access roads within the DEV-owned property as part of site-preparation activities. This estimate makes assumptions on the amount of road required to build as well as the cost per mile to build such road. The assumptions were based on previous industry experience building construction access roads for various industrial projects.

Legal – External: \$780,606

- This cost is paid to DEV external counsel to support review of regulatory documents. DEV frequently contracts with external counsel. This estimate is based off of the proposed work scope of the Project and anticipated support needed.

## MOUNTAIN STATE ENERGY HOLDINGS CLEAN HYDROGEN ATR PROJECT

- i. Personnel \$17.5MM
- ii. Fringe Benefits \$7.5MM
- iii. Travel
- iv. Equipment
- v. Supplies
- vi. Contractual \$40MM
- vii. Other \$10MM
- viii. Indirect Charges

Cost Bucket	Development (2 years)	Post Financial Close (3 years)	Total
Engineering	\$13M	\$40M	<b>\$53M</b>
Project Management Org/Permitting/Legal	\$12M	\$10M	<b>\$22M</b>
<b>Total</b>	<b>\$25M</b>	<b>\$50M</b>	<b>\$75M</b>

The total anticipated capital expenditures for this project are approximately \$5 billion dollars. Mountain State Clean Energy's total development spend to-date for the project has been \$16 million, and it is anticipated that the project partners involved in MSCE will be cost sharing remaining CAPEX.

## HANEY COMBINED CYCLE NATURAL GAS WITH CARBON CAPTURE AND SEQUESTRATION PROJECT

The \$50 million requested funding for this project will allow for the site-specific engineering for this project. This work will be performed by contractors who will develop project specific detailed design for the power plant site, amine CO<sub>2</sub> capture plant site and specific designs for the CO<sub>2</sub> injection.

### CONTRACTS:

Since almost all project related work will be performed by subcontractors, our project budget is broken down by project subcontractor elements:

- A. Combined cycle power plant: GE-Vernova & Vitis Energy: \$1.4B
  - a. Materials and Equipment: \$968M
    - i. Civil: \$25.2M
    - ii. Gas Turbine and related equipment: \$293.4M
    - iii. Balance of Plant Equipment: \$247.2M
    - iv. Electrical equipment: \$124.8M
    - v. Instrumentation and controls: \$214.3M
    - vi. Common Infrastructure: \$63M
  - b. Construction: \$432M
- B. Amine carbon Capture plant: \$1.4B
  - a. Materials and Equipment: \$687M
    - i. Civil: \$13.4M
    - ii. Heat exchangers and heat transfer equipment: \$123.7M
    - iii. Piping: \$2.4M
    - iv. Process fluid transfer and Process Controls: \$232M
    - v. Environmental and waste stream processing: \$135M

- vi. CO<sub>2</sub> Compression: \$128M
- vii. Electrical: \$52M
- b. Construction: \$713M
- C. High Pressure CO<sub>2</sub> pipeline, injection well and injection pumping station: \$200M
  - a. Pipeline (assumes 10 miles @ \$7.5M per mile all-in): \$75M
  - b. ClassVI injection well (engineering, permitting and construction): \$53M
  - c. CO<sub>2</sub> injection: \$72M

#### CNX COAL MINE METHANE CAPTURE AND REUSE PROJECT

- ix. Personnel \$5MM
- x. Fringe Benefits
- xi. Travel
- xii. Equipment \$10MM
- xiii. Supplies
- xiv. Contractual \$10MM
- xv. Other
- xvi. Indirect Charges

The project is requesting a grant award of \$25 million, to be spent over 5 years, which represents less than half of the total anticipated expense associated with the planned facilities. The project proposes a 50% match of private funding to the grant award, while anticipating total project costs to exceed \$50 million within 5 years of the grant award.

#### ENERGY AUDITS AND EFFICIENCY UPGRADES FOR GOVERNMENT BUILDINGS PROGRAM

- i. Personnel: \$815,031
- ii. Fringe Benefits: \$320,072
- iii. Travel: \$10,850
- iv. Equipment
- v. Supplies
- vi. Contractual
- vii. Other \$50,000,000
- viii. Indirect Charges
- ix. Personnel

#### PERSONNEL:

Program Manager: Manages the Energy Audits and Efficiency Upgrades for Government Buildings Program. Duties include: leading State interagency response to both energy audits and efficiency improvement projects; developing quality control measures to ensure proper vetting of contractors; coordinating access to energy audits for counties and municipalities; training partners and relevant staff on the use of relevant software programs, including Portfolio Manager; conducting site visits, program evaluations, and other monitoring activities; and generating program reports. \$60,000/year FTE for 5 years, 5% annual cost of living adjustment. = \$331,538

Program Manager: Manages CPRG workforce development activities associated with the Efficiency Upgrades for Government Buildings Program. Duties include: overseeing development of community engagement strategy in line with the WVOE Community Engagement Strategic Plan (due fall 2024); coordinating implementation of subgrantee workforce development strategies across subgrantee projects and with overall WVOE strategy; building and maintaining partnerships with local and

community organizations to facilitate communication, education, and engagement; conducting site visits, program evaluations, and other monitoring activities; and generating program reports.

\$60,000/year FTE for 5 years, 5% annual cost of living adjustment. = \$331,538

Economic Development Analyst: Oversees independent Quality Control and Assessment activities associated with the collection of environmental information, including GHG measurements; position required by EPA/WVOE QAPP and QMP. \$55,000/year 0.5 FTE for 5 years, 5% annual cost of living adjustment. = \$151,955

Total = \$815,031

#### FRINGE:

Includes taxes, medical insurance, retirement and other non-salary expenses estimated as a percentage of salary. The rate for West Virginia Department of Economic Development Fringe Benefits is 35%.

Program Manager: 35% of \$60,000/year for 5 years, 5% annual cost of living adjustment = \$133,444

Program Manager: 35% of \$60,000/year for 5 years, 5% annual cost of living adjustment = \$133,444

Economic Development Analyst: 35% of \$55,000/year for 5 years, 0.5 FTE, 5% annual cost of living adjustment = \$53,184

Total = \$320,072

#### TRAVEL:

Includes costs for mileage, vehicle rental, air fare, meals, and lodging necessary to implement the program and to oversee projects. Costs are estimated annually for staff travel to meetings, conferences, and project site visits. "Staff travel" may include travel expenses supporting attendance at CPRG national or regional meetings, training pertinent to CPRG program or project implementation (such as, but not limited to, training sessions, university or college workshop/courses), and other CPRG meetings held regionally or within the state.

Travel for 2 FTE staff to attend Professional Development Workshops	Cost Per Year	Total Cost
Airfare: 2 @ \$600 round trip	\$1,200	\$6,000
Per Diem: 2 staff x 4 days @ \$60/day	\$480	\$4800
Hotel: 2 staff x 3 nights @ \$250/night	\$1,500	\$7,500
In-State Conference & Outreach		
Hotel: 2 staff x 2 nights @ \$200/night	\$800	\$4,000
Per Diem: 2 staff x 3 days @ \$60/day	\$360	\$1,800
Registration Fees for Training Events: 3 staff x 6 events @ \$500/event	\$3000	\$15,000
In-State Monitoring: 30 trips/year @ \$250/trip	\$7,500	\$37,500
Total		\$76,600

#### SUPPLIES:

Printers: 3 printers for the two program manager and quality assurance monitor, to support execution of program goals. 3 printers @ \$200 each, one-time expense. = \$600

Printer Supplies: Ink and toner for producing Phase I energy benchmarking training materials, energy auditor workforce recruitment materials, training supplies, and job placement aids; Phase II building efficiency upgrade advertising materials; and program monitoring and evaluation instruments. = \$2,000

Printer Paper: For producing Phase I energy benchmarking training materials, energy auditor workforce recruitment materials, training supplies, and job placement aids; Phase II building efficiency upgrade advertising materials; and program monitoring and evaluation instruments. = \$2,500

Total = \$ 5,100

#### **OTHER:**

Energy Audits and Efficiency Improvements to Government-Owned Buildings: The funding breakdown for this program includes:

*Phase I: Energy Audits* - implementation of energy audit programs at state, county, and local government facilities. 10% (\$1M) of program funds for this phase will be used to purchase software capable of automatically tracking energy usage data from buildings, uploading to integrated platforms like Portfolio Manager, and providing users with legible reports on energy usage trends over time. This software allocation will also be used to train staff in state, county, and local agencies to use and maintain their agency's building stock in the software platform. = \$10M

Funding required to support workforce development training necessary to complete the energy efficiency audits for Phase I of the program, created in collaboration with knowledgeable local partners such as the WV Building Professionals Association. Selected collaborators will be identified through state- and federally-approved procurement practices. = \$25M

*Phase II: Efficiency Improvements* - for efficiency improvements to state government-owned buildings, following a menu of pre-identified efficiency upgrades and using a pre-screened list of contractors to ensure quality, reasonableness, and timeliness. = \$30M  
= \$65,000,000

**TOTAL:** \$ 66,216,803

### **b. Expenditure of Award Funds**

#### **EFFICIENCY IMPROVEMENTS IN EXISTING FOSSIL FUEL-FIRED POWER PLANTS PROGRAM**

Applications will be accepted twice annually beginning three months after award; program funds will be disbursed until exhausted or until the end of the 5-year CPRG grant period. Projects selected for funding must begin workforce and community engagement activities within the first quarter of the award; construction activities are expected within six months, and project completion within 18 months unless otherwise specified in the project proposal. Awardees must have begun construction on existing projects before receiving funds for new projects through this program.

#### **DOMINION SMALL MODULAR NUCLEAR REACTOR PROJECT**

The milestones for this project are planned to be accomplished within 5 years with all expenditures from this grant occurring in that time period. The business management team will be responsible for ensuring this development stays on target and achieves the outlined milestones on schedule.

#### **MOUNTAIN STATE ENERGY HOLDINGS CLEAN HYDROGEN ATR PROJECT**

The design process will be completed over the first two years of the project, after which point MSCE will pursue submission of appropriate permits for the remaining three years of the project. By the close of the 5-year grant period, the project team will have completed all preliminary engineering required to



complete site permits for the proposed project, with the additional intention of completing and submitting construction permits to begin facility work.

#### HANEY COMBINED CYCLE NATURAL GAS WITH CARBON CAPTURE AND SEQUESTRATION PROJECT

The goals for this project period are for the completion of site-specific engineering related to the construction of both the natural gas and carbon capture facilities. By the completion of year five, the project team will possess project-specific, detailed designs for the power plant site, amine CO2 capture plant site, and specific designs for CO2 injection.

#### CNX COAL MINE METHANE CAPTURE AND REUSE PROJECT

The following table details the funding amounts that will be spent from the grant award and the total project budget within the first five years of the project.

Years after award	1	2	3	4	5	Total
Grant Award (\$MM)	\$0.5	\$7.9	\$4.7	\$3.7	\$8.2	\$25
Total Spend (\$MM)	\$1.1	\$15.9	\$9.4	\$7.3	\$22.1	\$55.8

#### ENERGY AUDITS AND EFFICIENCY UPGRADES FOR GOVERNMENT BUILDINGS PROGRAM

The WVOE will expend funds over the course of the 5 years, implementing Phase 1 in the first 3 years and Phase 2 beginning in year 2. Capital improvements of at least \$12.5M will be planned each year to ensure that funds are expended before the end of the award. Projects must be operational within one year of selection for implementation and funding through this program.

### c. Reasonableness of Costs

#### EFFICIENCY IMPROVEMENTS IN EXISTING FOSSIL FUEL-FIRED POWER PLANTS PROGRAM

Cost estimations for this project were developed through surveys of the state's two main electric utilities, Appalachian Electric Power and FirstEnergy. These utilities were asked to provide a list of potential energy efficiency projects based on current, known areas of potential efficiency gains (updated energy audits may alter these lists) as well as cost estimates and projected project lengths. Each utility submitted a list of approximately 25 potential projects affecting efficiency at single and fleetwide locations. WVOE used these lists, in combination with subsequent stakeholder engagement with utilities and local communities to identify potential high-value projects and develop a program budget capable of achieving efficiency goals shared by all.

#### DOMINION SMALL MODULAR NUCLEAR REACTOR PROJECT

The cost estimation for this project comes from contractor estimations and industry lessons learned and best practices based on Tennessee Valley Authority and DEV experiences in previous projects.

#### MOUNTAIN STATE ENERGY HOLDINGS CLEAN HYDROGEN ATR PROJECT

Cost estimations for this project come from the project partners' extensive background in this field, and their track record of successfully completing plants of this nature at multiple sites around the country. They have combined that knowledge with their working knowledge of operations at Longview Power

plant to extrapolate costs of business in West Virginia, leveraging their existing collaborative relationships with local labor and vendors to secure equipment and workforce quotes when needed.

#### **HANEY COMBINED CYCLE NATURAL GAS WITH CARBON CAPTURE AND SEQUESTRATION PROJECT**

The project cost estimated is benchmarked to actual project cost data from independent government sources wherever possible, combined with actual cost experience for amine carbon capture technology projects. This ensures project cost estimates are reasonable because they are tied to actual project experience, either as reported to the US government where possible or from projects using comparable technology. Since this project represents a first application of the combination of these specific technologies in the US this project cost build approach is the best way to ensure competitive cost.

The projected costs of this project are based on previous reported US Energy Information Agency (EIA) numbers for construction and operation of a combined cycle gas power plant plus best achievable cost estimates for construction and operation of an amine-based CO<sub>2</sub> capture plant plus recent actual costs for construction and operation of a high-pressure CO<sub>2</sub> pipeline and geologic injection pumping station. The total projected project cost derived from these inputs is thus an aggressive but achievable cost. We would note that in this type of project there is no incentive for the project developer to allow costs to go higher, since this would disprove our project basis that this type of project can be developed for an all-in cost that makes economic sense and would make it difficult if not impossible for us to develop similar projects in other areas of the US.

#### **CNX COAL MINE METHANE CAPTURE AND REUSE PROJECT**

It is currently estimated at this time that approximately 40% will be equipment, 40% will be contractual for installation of equipment, and the remaining 20% will be administrative and engineering associated with internal and external employees.

The project cost estimates for pipeline and compression are based on actual costs from similar projects CNX has completed for its existing midstream and water infrastructure. For example, due to the CMM system operating at very low pressures, CNX is able to use HDPE pipe instead of steel. This is the same material used for waterline installations to transport water throughout its Marcellus and Utica gathering systems. Each newly developed well pad has an associated HDPE line built to it that ties into its existing water system. The team has recently completed several miles of HDPE pipeline. Their estimates for new pipeline installations align with the recent project costs. The compressor estimates were based on the actual purchase and installation costs of a recently installed compressor on one of their well pads. The cost estimation tools used by the team are continually updated to reflect up-to-date pricing.

#### **ENERGY AUDITS AND EFFICIENCY UPGRADES FOR GOVERNMENT BUILDINGS PROGRAM**

There are approximately 3500 state buildings owned by West Virginia. If all buildings are entered into the software, and 20% are audited and upgraded, then 700 buildings will be audited in the first 3 years. These audits will be performed on the least efficient buildings consuming the most energy, so the improvements will go to the buildings that stand to receive the highest benefit of this effort. The provision of Energy Savings Contracts ensures that individual State, County, and Local agencies can secure the most competitive and cost-effective benchmarking and auditing services.