

## Section 1: Overall Project Summary and Approach

### Part A: Description of GHG Reduction Measures

#### Overall Strategy

The Philadelphia Energy Authority (PEA) seeks a Climate Pollution Reduction Grants Program (CPRG): Implementation Grant to fund shovel-ready energy efficiency, electrification, and clean energy projects and programs that require critical gap-filling funding to significantly reduce greenhouse gas (GHG) emissions and provide tangible benefits to low-income and disadvantaged communities (LIDACs) across Southeast Pennsylvania<sup>1</sup> in the grant's five-year performance period. This implementation grant seeks to implement measures included under the region's Priority Climate Action Plan (PCAP), led by the Delaware Valley Regional Planning Commission (DVRPC).

As the applicant organization for this implementation grant, PEA is both executing programs and working with a network of 37 trusted subrecipients - including nonprofits, local governments, school districts and affordable housing providers - to advance, incentivize, implement, and codify projects and programs to reduce GHGs in the built environment. Nearly 80% of the requested funding will be dedicated to projects and programs that directly serve LIDACs. PEA's goal is to achieve deep and lasting GHG reductions in the region by building the capacity of a network of implementers who take an equity-first approach to the clean energy transition.

PEA's \$198M request will support \$472M of total project investments through a combination of project match dollars and leveraging other state and federal funding, especially IRA Elective Pay tax incentives and funds from the Greenhouse Gas Reduction Fund, to deploy CPRG funding as critical gap-filling dollars. By seeking transformational funding from competitive grant applications like the CPRG Implementation Grant for projects and programs that have little support or subsidy at the state level in PA, the Commonwealth can begin to close the gap on the equitable clean energy transition. This application represents a diverse set of stakeholders and shovel-ready projects. It also includes ready-to-scale programs that will use CPRG funding to support replicable initiatives that will guarantee GHG-reducing projects even without federal grant funding in the future.

#### Impact

Feature	Metric
% CPRG spend in LIDAC census tracts	\$155M (78.3% of total dollars)
New Onsite Solar installed	45.8MW funded projects
New Onsite Battery Storage installed	19.4MW funded projects
New Geothermal installed	217.5KW funded projects
Households served by GHG-reducing measures	Nearly 7,000
NEW EV Charging Infrastructure (EVCI) installed	133 chargers

Implementation of the proposed projects and programs will result in Southeast PA residents feeling firsthand the immediate impacts of the Inflation Reduction Act (IRA) in the form of lower utility bills through LIDAC residential projects and programs; safe and healthy schools, libraries, and public spaces through energy retrofits and installing solar PV; and improved air quality through critical infrastructure upgrades for government facilities and electric vehicle charging infrastructure. To support this slate of projects, a Shared Energy Manager Program provides capacity for continued energy savings and GHG emission reductions in the long-term for local governments serving LIDACs. In addition, this application proposes to transform the way school districts and affordable housing providers retrofit and construct buildings through demonstration projects and updated technical specifications to ensure impact well

<sup>1</sup> Southeast PA is geographically comprised of Bucks, Chester, Delaware, Montgomery, and Philadelphia counties in Pennsylvania.

beyond the five-year performance period. Long-term, this proposal will spur lasting innovation and durable GHG reductions through investments in public infrastructure, by seeding early adopters for innovative solutions, and by investing in long-view programs.

#### GHG Reduction Measures

PEA has worked collaboratively with 37 subrecipients across the 5-county region of Southeast PA to compile a slate of 56 projects and programs that address the following GHG emission reduction measures outlined in the PCAP. (A comprehensive list of all subrecipients and projects can be found in PEA's Cover Page, and those projects will be referred to throughout this and other sections.)

- Measure 1: Actions to Support Decarbonization of Government Operations
- Measure 2: Actions to Implement Energy Efficiency, Electrification, and Clean Energy for Residential Buildings
- Measure 3: Actions to Implement Energy Efficiency, Electrification, and Clean Energy for Commercial Buildings
- Measure 4: Actions to Transition Light Duty Vehicles to Low- or No-Carbon Emission Vehicles

Many projects within PEA's portfolio address additional measures in a secondary capacity, including:

- Measure 5. Actions to Expand and Improve Transit
- Measure 6. Actions to Implement Bicycle, Pedestrian and Active Transportation Improvements
- Measure 7. Actions to Implement a Clean Electricity Grid and Ensure Grid Reliability
- Measure 8. Actions to Reduce Solid Waste and Better Manage Waste Generated
- Measure 9. Actions to Reduce Emissions at Wastewater Treatment Plants and to Increase Generation of Biomethane

PEA's focus on municipal, commercial, and residential projects, as well as EVs, is complemented by the other CPRG implementation applications that will provide coverage to Southeast PA. The PA Department of Environmental Protection's statewide application will implement industry-sector projects that align with PCAP Measures 7 and 9 as well as the PA statewide PCAP, and SEPTA's Southeast PA regional application will implement projects around improving transportation systems that align with PCAP Measures 5 and 6. PEA appreciates the opportunity to work in concert with other PA agencies to ensure the totality of PCAP measures result in meaningful GHG emission reductions across the region.

As the applicant organization, PEA will measure success via two recurring milestones: (1) successfully complying with EPA regular reporting requirements, and (2) completing each project and achieving stated outputs and outcomes within the five-year performance period. To ensure the success of its own projects as well as projects led by subrecipients, PEA will provide technical assistance and project support on performance measures to maximize GHG-reducing strategies and co-benefits (especially to LIDACs in design and implementation); assist accessing other funding from federal, state and utility sources; and facilitate learning amongst subrecipients to replicate, scale and accelerate progress toward EPA's stated CPRG goals. Tasks and milestones are discussed further in the context of performance measures, outputs, and outcomes in Section 3.

#### **Measure 1: Actions to Support Decarbonization of Government Operations**

*This measure aligns with the FY 2022-2026 EPA Strategic Plan, particularly Goal #1: Tackle the Climate Crisis and Strategic Goal #4: Ensure Clean and Healthy Air for All Communities.*

To dramatically reduce greenhouse gas emissions across the 5-county region, this measure **provides incentives for the direct implementation of end-use energy efficiency, electrification, and clean energy measures in existing and newly constructed government-owned buildings and facilities.** This action-oriented measure focuses on project implementation and direct GHG emission reductions rather than project planning or research and reflects the near-term needs of each participating local government.

#### Importance and Impact of Measure 1 Projects

Creating a robust cohort of local governments, municipalities, and school districts will have a multiplier effect from demonstration projects and shared learnings, as well as widespread cost savings and infrastructure improvement, much of which may have been deprioritized in favor of funding for direct public services. PEA is proud to have

institutional expertise in working with local governments thanks to its role in holding contracts and financing long-term energy projects on behalf of the City of Philadelphia and is confident in its ability to effectively manage similar projects across the 5-county area in partnership with its subrecipients. **Measure #1 projects are expected to reduce GHG emissions by 46,168.2 MTCO2e by 2030, and 452,943.1 MTCO2e by 2050.**

#### Major Features of Measure 1 Projects

These projects include infrastructure upgrades for publicly accessible buildings like K-12 schools and colleges, libraries, community and activity centers, health centers, and senior service facilities, as well as critical municipal services buildings including police departments, fire departments, public works, and county offices.

Feature	Metric
Measure spend in LIDAC census tracts	\$65.6M out of \$96.0M (68.3%)
New Onsite Solar installed	14.3 MW funded projects
New Onsite Battery Storage installed	17.3 MWh of battery storage
New Geothermal installed	217 kW of geothermal
Nature and Number of Municipal Buildings	Government Buildings – 17 Libraries – 5 Health Centers – 7 Food Systems Centers - 4
	Schools - 10 Community Centers - 7 Geriatric Facilities - 1
New EV Charging Infrastructure (EVCI) installed	114 chargers

#### How These Projects Advance the Measure

PEA intends to use this slate of shovel-ready local government projects across the 5-county area to deploy demonstration projects, improve public services, and develop capacity with targeted technical assistance toward decarbonizing local government buildings and infrastructure. This slate of projects is poised to make a measurable impact in GHG emission reductions within 5 years and have the potential to create momentum for future municipal energy projects, prioritize equity in capital projects, and contribute to a robust clean energy economy.

The importance of investing in decarbonization of government buildings and facilities is four-fold: 1) reduce wasteful spending on utilities by ensuring government buildings and facilities are energy efficient, which can drive valuable public funds elsewhere; 2) city and county government entities can set a positive example for decarbonization, and overall climate resilience throughout their jurisdictions and across building sectors; 3) municipal projects directly meet the needs of schools and districts within LIDACs, where people of all ages are particularly vulnerable to environmental injustice; 4) local governments are well-positioned to consider lifecycle cost in decision-making because they are stable entities that own buildings long-term, thus, these energy savings often pay or deeply subsidize upfront capital improvements resulting in energy savings beyond the grant period.

School districts are among the critical government facilities PEA seeks to improve through CPRG given how much LIDAC members rely on them. Just within the School District of Philadelphia (SDP), for example, nearly 70% of enrolled students<sup>2</sup> qualify as economically disadvantaged, and consistently deteriorating buildings with outdated HVAC systems and deferred maintenance needs have an immediate and direct impact on the health and performance of students, teachers, and administrators alike.<sup>3</sup> Approximately half of school-aged children with asthma have missed at least one school day because of these effects<sup>4</sup>. SDP currently estimates its district-wide repair

<sup>2</sup> US News and World Report. "Overview of Philadelphia City School District"

<sup>3</sup> Harvard University TH Chan School of Public Health. "How School Buildings Influence Student Health, Thinking And Performance"

<sup>4</sup> Hsu J, Qin X, Beavers SF, Mirabelli MC. Asthma-Related School Absenteeism, Morbidity, and Modifiable Factors. Am J Prev Med. 2016

costs at \$10B<sup>5</sup>, while the district maintains a budget deficit over \$400M, which only grows year over year. While these challenges extend throughout SDP's 217 schools, PEA will leverage its CPRG-funded SDP partnership to reach nearly 10% of SDP's portfolio by pursuing ultra-efficient retrofits in 12 schools and solar PV on 9 schools, to set a replicable standard and process to apply to future school improvement efforts and unlock additional funding for energy-efficient projects across the district.

Though the goal to decarbonize local government operations applies directly to each of the projects under this measure, several of these projects also meet Measure 3, Measure 4, and Measure 7. Actions to Implement a Clean Electricity Grid and Ensure Grid Reliability. Philadelphia Authority for Industrial Development's (PAID) Navy Yard Bus Electrification Project and Transit and Pedestrian Improvement Project specifically meet goals set forth in Measure 5 and Measure 6, respectively. Delaware County's plan to construct a new organic waste commercial-grade composting facility and the City of Philadelphia's improvements to its Fairmount Park organic compost facility specifically meet goals set forth in Measure 8. The Philadelphia Water Department's new automated biogas utilization valve at its Southeast Water Pollution Control Plant specifically meets goals set forth in Measure 9.

#### Risks Associated with Municipal Projects

1) **Municipalities are still getting educated and creating processes for elective pay.** Tax credits are new to local governments, and since they do not have tax liability and do not file annually with the IRS, there is an inherent learning curve. PEA is baking this assumption into its CPRG request by accounting for elective pay leverage in its budget calculations to avoid applying CPRG funds to activities already incentivized by the federal government. PEA's goal is to create a peer community of local governments and nonprofits to learn how to leverage and maximize available tax incentives to reduce climate pollution cost-effectively. PEA will support this CPRG cohort by facilitating critical technical assistance on procurement, financing, and filing for elective pay.

2) **Procurement processes and timelines.** Even when government projects have been scoped to the point of having energy conservation measures, energy savings, and budgets detailed, public procurement and contracting processes can be lengthy. PEA has extensive experience in procuring large energy projects on behalf of the City of Philadelphia and will serve as a technical resource for local governments covered under this grant.

#### **Measure 2: Actions to Implement Energy Efficiency, Electrification, and Clean Energy for Residential Buildings**

*This measure aligns with the FY 2022-2026 EPA Strategic Plan, particularly Goal #1: Tackle the Climate Crisis and Strategic Goal #4: Ensure Clean and Healthy Air for All Communities.*

This measure provides incentives for the direct implementation of end-use energy efficiency, electrification, and clean energy measures in the residential buildings via projects and programs that directly spur projects. The residential programs and projects proposed in this application provide measurable and scalable solutions to reduce GHG emissions and improve affordability for LIDAC owners and renters in single-, multi-family, and communal living residences. Funding is focused primarily on Philadelphia County for this measure; PEA will work during and beyond the grant period to export successful project and program models to the surrounding counties.

#### Importance and Impact of Measure 2 Projects

Energy used in residential buildings for heating, cooling, cooking, and electricity accounts for approximately 19% of GHG emissions in the Philadelphia MSA.

The Federal Reserve Bank of Philadelphia estimates the home repair need in the Philadelphia Metropolitan Statistical Area (MSA) is \$3.7B. Residents below 30% area median income (AMI) are paying on average 18% of their income to utilities, making Philadelphia one of the most energy-burdened cities in the U.S. High energy burden is disproportionately experienced by low-income and Black, Indigenous, people of color households<sup>6</sup>. Low-income homeownership in Philadelphia is also high, with 38% of low-income Philadelphians living in owner-occupied

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<sup>5</sup> MacDonald, Tom. "Philly schools need billions in repairs and upgrades, district leaders tell City Council." WHYY, April 2, 2023

<sup>6</sup> Dreobl, A., L. Ross, and R. Ayala. 2020. "How High Are Household Energy Burdens?" Washington, DC: American Council for an Energy-Efficient Economy.

properties. With limited income and high energy costs, Philadelphia’s low-income homeowners often struggle to maintain their homes, leading to serious consequences for their cost of living, health, safety, and the value of their assets. Preserving existing homes and making them long-term affordable through energy efficiency, electrification, and clean energy supply is an important strategy for Philadelphia. For low-income Philadelphians who rent, there are insufficient units available at an affordable (30% of income) price point<sup>7</sup>. Nationwide, the median energy burden for renters is 13% higher than for owners; nearly half of Philadelphia households rent their homes<sup>8</sup>. Preserving and expanding affordable units in partnership with providers of both new and retrofitted rental units is a priority for decarbonization under this application, including opportunities to innovate and scale best practices by high-volume affordable housing providers to ensure long-term affordable energy for renters.

While every project or program in Measure 2 delivers benefits to LIDACs, almost all funding is dedicated to Philadelphia, where PEA can leverage funding and support from mature, well-coordinated affordable housing programs. PEA intends to leverage this targeted investment to broaden the impact of this Philadelphia-based approach to the entire region, exporting lessons learned especially in braiding funding for low-income home repair and solar for long-term affordability. In addition, the quality of one’s home is inexorably tied to health outcomes. Energy-focused home improvements improve affordability and health indicators including reductions in criteria air pollutants (CAPs) and hazardous air pollutants (HAPs). These measures reduce energy burden *and* keep people safe and healthy in their homes, ensuring PEA does not leave the most climate vulnerable residents behind. **Measure #2 projects and programs are expected to reduce GHG emissions by 32,988.3 MTCO2e by 2030, and 301,409.7 MTCO2e by 2050.**

#### Major Features of Measure 2 Projects

PEA’s residential projects includes three single-family owner-occupied programs serving at least 4650 households, three single-family projects serving at 94 least households, ten multi-family projects, and one communal living facility serving 120 residents, covering nearly 7,000 households. Fifteen of these seventeen projects and programs will take place in federally designated disadvantaged census tracts and those not in LIDAC-census tracts serve LIDAC populations, lowering energy burdens and improving lives for thousands of low-income residents.

Feature	Metric
Measure spend in LIDAC census tracts	\$75.9M out of \$80.4M (94.4%)
New Onsite Solar installed	444 kW of PV
New Onsite Battery Storage installed	1.5 MWh of battery storage

#### How These Projects Advance the Measure

Through DVRPC’s public engagement process to develop the PCAP, LIDAC members acknowledged there is a robust landscape of programs and organizations in urbanized areas that focus on climate mitigation activities, though they would benefit from greater funding and/or coordination, with a particular focus on residential energy conservation and home repairs and supporting contractors and workforce development focused on GHG reduction measures (see p. 17 of PCAP). More information about feedback from LIDAC members can be found in Section 4. PEA’s slate of residential projects also includes scalable, replicable models to address challenges and gaps with residential clean energy retrofit programs for existing single-family homes and multi-family buildings that reflect the feedback received from LIDACs in this process and over many years of robust stakeholder engagement. With low household incomes and high energy burdens in the region, PEA must pursue all available strategies to lower energy demand

<sup>7</sup> The Pew Charitable Trusts. 2020. “The State of Housing Affordability in Philadelphia”. <https://www.pewtrusts.org/en/research-and-analysis/reports/2020/09/the-state-of-housing-affordability-in-philadelphia>

<sup>8</sup> The Pew Charitable Trusts. 2020. “The State of Housing Affordability in Philadelphia”. <https://www.pewtrusts.org/en/research-and-analysis/reports/2020/09/the-state-of-housing-affordability-in-philadelphia>

and promote electrification and renewable energy sourcing to provide for affordable clean energy supply. CPRG funding will fill critical gaps for residential-serving retrofit programs including:

- PEA's own nationally recognized **Built to Last Program** will restore and future-proof 4,000 additional low-income single-family homes citywide by adding solar, heat pumps, and other electrification measures.
- Centennial Parkside Community Development Corporation's **Energy Retrofit Program** from its award-winning **Buildings Upgrade Prize Program**, which will deploy energy efficient retrofits in 50 single-family homes in West Philadelphia. This program will coordinate with Built to Last but will take a neighborhood-scale approach instead of deploying citywide.
- Energy Coordinating Agency's **Heating Oil to Heat Pump Conversion Program** will transition 600 households off inefficient heating oil, layering a new and much needed service into the constellation of programs available to Philadelphia's LIDAC homeowners. This program will coordinate with Built to Last but is a new and much needed resource for the 5,000 LIDAC homeowners who need help transitioning away from fuel oil to heat their homes.
- Philadelphia Gas Works' **Low Income Multi-Family Efficiency (LIME) Program** will reach 12 multi-family buildings with direct GHG-reducing efficiency measures including roof insulation, air sealing, and smart thermostats. This project will not incentivize new fossil fuel infrastructure.

These home retrofit programs build on and provide complementary services to existing federal and state programs, including the Weatherization Assistance Program and PA's Whole-Home Repairs Program and PA's utility-led Act 129 Energy Efficiency Programs. Careful coordination, sequencing, and braiding ensures these programs are adding services not available in the market due to insufficient funding and/or restrictions on uses but also leveraging complementary funding sources to help serve the maximum number of LIDAC households. These programs, where possible, will also leverage federal tax incentives and grant funding (Solar for All award pending) to include rooftop solar for long-term affordability. This application also seeks to support nonprofit organizations that renovate and build affordable units at scale in the region.

The **Philadelphia Housing Authority** will execute two pilot retrofit projects using a higher tier of Enterprise Green Communities (ECG) Certification, impacting 341 affordable units. This physical demonstration project will be supported by the Bloomberg Philanthropies-funded innovation team (i-team) housed in the City's Office of Sustainability to analyze the impacts of the enhanced clean energy measures deployed in the built projects. The intent is for the i-team to help codify these measures into a new set of high-performance retrofit standards PHA will use in its planned renovation of 3,679 additional affordable housing units. The **Philadelphia Housing Development Corporation** will be supported in portfolio-wide energy efficiency strategies as well. For the 30 nonprofit-owned affordable housing projects totaling around 1,100 units that will need recapitalization and rehabilitation within the next 5 years, PEA will serve as PHDC's fiscal agent and technical assistance partner to facilitate energy audits and pre-development loans. This portfolio-wide approach to energy efficiency recapitalization and rehabilitation will ensure these units remain affordable for the long-term.

There is also a tremendous opportunity in demonstrating clean energy practices in new construction and renovation projects led by nonprofit organizations that are embedded in their local communities and/or projects that deliver direct benefits to LIDACs.

- **Habitat for Humanity's construction of 26 new affordable homeownership units** for low- to median-income households including rooftop solar to ensure affordability long-term. The rooftop solar will leverage the Investment Tax Credit and Solar for All (award pending) so it is not included in the CPRG funding request.
- **YouthBuild Philly's** project will create **3 affordable units of transitional housing for women** through ultra-energy efficient gut rehabs of three properties and will serve as a training ground for its high school students that will be Philadelphia's clean energy workforce of tomorrow.
- **Brandywine Realty Trust**, while not an affordable housing developer, is using CPRG funding to achieve a deep energy renovation of an **adaptive reuse** and conversion of an existing 13-story tower from commercial office use to 170 residential energy efficient multi-family units, pledging to make **40% or 68 of the units affordable at 60% area median income** in keeping with the LIDAC goals of this grant.

- **Deep Sea-GP, LLC** will create Beacon of Hope, a project to transform an existing 9-story building into a **30 units** of mixed-use energy-efficient building that will provide veteran housing and support services to Kensington residents.
- **Camphill Village Kimberton Hills**, a **120-person** life-sharing community for adults with intellectual disabilities, will undertake a **comprehensive clean energy transition** including solar plus battery storage.
- **Pennrose** will construct **Bartram Village Phases I and II**, providing a total of **154 energy efficient units and a community center** to low-income residents of Kingsessing; complete **energy and infrastructure upgrades at Neumann North**, a **67-unit** public housing apartment complex serving low-income seniors in Fishtown; and construct a **65-unit 100% affordable scattered-site development in Strawberry Mansion** to support low-income families.

#### Risks Associated with Residential Projects

For single-family and multi-family retrofit programs, disruptions to residents when upgrading occupied homes and apartments, use restrictions on program services, and sufficient local labor to serve increased demand for clean energy. PEA and its subrecipients are already working to address these issues. Built to Last serves as a coordination platform for all income-eligible programs for qualifying Philadelphia homeowners to ensure basic systems repairs, and remediation is efficient for the homeowner, properly sequenced and completed to enable energy upgrades that would not otherwise be possible without first fixing structural and environmental issues. In addition, PEA, ECA, and YouthBuild all run workforce development programs to ensure there is a local, diverse, and well-trained clean energy workforce in Philadelphia to meet the growing needs of the community (See Sections 4 and 5 for more). For new construction and retrofit projects, one of the biggest challenges of this grant is potential delays in meeting the five-year implementation timeline should any of the other funding sources for a project be delayed. PEA is well-positioned to address capital concerns through its Commercial Property Assessed Clean Energy (C-PACE) Finance Program that closed on nearly \$100M of ultra-efficient multi-family projects in 2023 alone<sup>9</sup> and through the Philadelphia Green Capital Corp. (PGCC), its green bank affiliate that will provide low-interest financing for residential properties through the Greenhouse Gas Reduction Fund (pending award). Ultimately, the included subrecipients are all experienced implementation partners who are aware of and equipped to overcome risks to program and project completion within the five-year performance period. Their biggest challenge is proper and consistent funding for their energy-focused projects and programs. CPRG addresses this challenge.

#### **Measure 3: Actions to Implement Energy Efficiency, Electrification, and Clean Energy for Commercial Buildings**

*This measure aligns with the FY 2022-2026 EPA Strategic Plan, particularly Goal #1: Tackle the Climate Crisis and Strategic Goal #4: Ensure Clean and Healthy Air for All Communities.*

This measure provides incentives for the direct implementation of end-use energy efficiency, electrification, and clean energy measures in the commercial buildings both via projects and programs that result in projects. The proposed projects and programs provide measurable and scalable solutions to reduce GHG emissions and improve affordability for predominantly LIDAC building owners and renters including nonprofits and small business owners. The proposed programs are designed to overcome at scale, specific market barriers to installing energy efficiency and clean energy measures in the region.

#### Importance and Impact of Measure 3 Projects

Energy used in commercial buildings for heating, cooling, and electricity accounts for more than 20% of GHG emissions in the Philadelphia MSA, and emissions from buildings and industry totals 69%. PEA will use CPRG funding to fill budget gaps in shovel-ready projects, as opposed to subsidizing 100% of a project, addressing inefficiencies in the market caused by the legislative and regulatory environment. By making direct GHG-reducing investments in critical community-serving facilities located in LIDACs, CPRG will deliver direct quality of life benefits like lowered CAP and HAP as well as long-term utility savings that can be better invested in the mission of these organizations. As a result, they can serve as market education tools and demonstrations of how things like solar, storage, and energy

<sup>9</sup> [https://philadelphiapace.org/wp-content/uploads/2024/02/2023\\_CPACE\\_YearInReview.pdf](https://philadelphiapace.org/wp-content/uploads/2024/02/2023_CPACE_YearInReview.pdf)



efficiency can be implemented in a wide array of building types and use cases. **Measure #3 projects and programs are expected to reduce GHG emissions by 129,102.8 MTCO<sub>2</sub>e by 2030, and 164,083.5 MTCO<sub>2</sub>e by 2050.**

#### Major Features of Measure 3 Projects

*Proposed Shovel-Ready Projects:* This measure is focused on incentivizing implementation of end-use energy efficiency and clean energy measures in existing and newly constructed commercial buildings and related infrastructure. Importantly, most of these buildings serve key community needs such as food distribution, community gathering spaces, and veteran housing.

Feature	Metric
Measure spend in LIDAC census tracts	\$11.4M of \$17.7M (64.4%)
New Onsite Solar installed	29.71 MW funded projects
New Onsite Battery Storage installed	233 kWh
Existing Commercial Energy Efficiency projects	750 small business refrigeration improvements in LIDACs, plus five comprehensive retrofit or solar commercial projects

The proposed slate of commercial projects was selected because they are shovel-ready and have strong community uses, including:

- **Philadelphia Youth Basketball's** project to install a 287kW rooftop solar array designed to cover all its electricity needs.
- **Solar States** will install a 30.4kW rooftop solar array on the Overbrook Environmental Education Center, a 2kW array on the new indoor garden addition, plus battery storage to cover all its electricity needs.
- **Mosaic Development Partners**, in partnership with Called to Serve Community Development Corporation, will transform the Zion Baptist Church Annex into the Reverend Leon H. Sullivan Community Impact Center including clean energy generation and LEED Silver Certification.
- **Share Food Program** - which provides meals to up 700,000 Philadelphians per month, including "more than 305,000 children across 800 area schools through the National Food Lunch Program"<sup>10</sup> - a project to upgrade its warehouse facility by installing solar panels and converting the facility to electric power.
- **BTM Solutions, LLC.** will develop the Philadelphia Business and Technology Center, a consortium of co-located businesses in West Philadelphia, as a pilot site to utilize solar and battery storage to power the center.

*Proposed Complementary Programs:* As implementers, PEA and its green bank affiliate Philadelphia Green Capital Corp (PGCC) have spent years running programs, working with community partners, and identifying key market barriers. Based on this robust experience, PEA proposes establishing two programs to support long-term clean energy adoption in commercial buildings.

**Small Business Energy Efficiency Program.** Most small food businesses are corner stores, community grocers, take-outs and limited seating restaurants. They have tight margins (usually less than 1%) and utility costs are a significant expense. Most of the equipment operates 24 hours a day, making it impossible for these businesses to avoid expensive peak demand electricity rates and high energy bills overall. Refrigeration is a discrete equipment type with high energy use and the business typically owns or leases the equipment even in instances where they do not own the building. To serve this market segment, PEA will provide technical assistance and subsidies for energy efficient upgrades to 750 small food businesses in LIDACs in Philadelphia. It will also identify further opportunities for energy savings, educate business owners on actions they can take to reduce their utility bills, and create entry-level jobs with program contractors.

<sup>10</sup> <https://whyv.org/articles/philadelphia-food-bank-share-food-program-justice-campaign/>



**Commercial Solar Incentive Program.** PEA's green bank affiliate, PGCC, will launch a program that provides \$1/watt grants to commercial and industrial solar installations, including nonprofit organizations, in Southeast PA and will provide technical assistance in conjunction with PEA's Solarize program to drive adoption beyond the projects supported by the CPRG subsidy. PEA's Solarize program has been serving commercial property owners since 2021. Despite the 428% growth of the residential Solarize program in the same period, the commercial program has not yielded any completed projects despite Solarize installers actively pursuing projects. PEA expects the Commercial Solar Incentive Program to: (1) move dozens of projects from the inquiry stage to installation due to making the economics and payback period favorable, (2) jumpstart this solar industry during this period when electricity supply prices are still quite low (typically \$0.03-\$0.07/kWh), (3) take advantage of declining solar costs due in part to initiatives in the Inflation Reduction Act, (4) expand market education efforts regarding commercial solar adoption, and (5) attract more C&I solar developers to the MSA to support sustained market growth beyond the performance period of the CPRG grant.

#### How These Projects Advance the Measure

Creating a robust cohort of nonprofits, community centers, food distribution centers, and small businesses will have a multiplier effect from demonstration projects and shared learnings, as well as widespread cost savings and infrastructure improvement, much of which may have been deprioritized in favor of funding for direct services to each community's most vulnerable residents.

#### Risks Associated with Commercial Projects

The major risk associated with PEA's slate of commercial projects include market volatility that affects a building's ability to create a full capital stack for its projects, especially with inflated interest rates, limited funding sources, and funding sources that are restricted to specific aspects of commercial facilities. Other risks include navigating the challenges in making improvements within existing buildings, including unforeseen challenges that arise once construction has begun. PEA has identified projects with diversified funding streams that can leverage its green bank affiliate, PGCC, to provide additional low-cost financial support to these projects through Greenhouse Gas Reduction Fund monies to mitigate this risk. CPRG provides a base upon which commercial project owners can layer additional funds. The National Clean Investment Fund allows these projects to access subsidized debt, reducing the total cost of capital. PEA and PGCC will provide ongoing support for subrecipients as they engage with GGRF recipients to finance portions of these projects. For the proposed programs, PEA is targeting financial incentives in areas identified and quantified as barriers to action. What's more, PEA and PGCC's deep work and expertise in implementation has resulted in a project pipeline for each of these incentive programs that will ensure that funds are expended efficiently within the five-year performance period. (Section 6: Programmatic Capability and Past Performance for more.)

#### **Measure 4. Actions to Transition Light Duty Vehicles to Low- or No-Carbon Emission Vehicles**

*This measure aligns with the FY 2022-2026 EPA Strategic Plan, particularly Goal #1: Tackle the Climate Crisis and Strategic Goal #4: Ensure Clean and Healthy Air for All Communities.*

This measure provides incentives for the direct implementation of electric vehicle charging infrastructure using innovative methods to maximize project impact for the communities in which they are located.

#### Importance and Impact of Measure 4 Projects

According to the PCAP (p. 52), transportation from light duty vehicles accounts for more than 25% of greenhouse gas emissions in the Philadelphia MSA. To address these emissions, this measure will accelerate the transition of light duty gas powered vehicles to electric and other low-carbon vehicles. Supplemented by existing federal incentives, this measure will be supported through the creation and expansion of a robust charging network, development of incentive programs, and charging rate plans. Indirect co-benefits of this project, including improved public health and the creation of clean energy jobs, will spread throughout communities. These projects provide an additional incentive for suburban residents to convert to EV usage, a notable benefit in areas where car usage is far higher due to fewer options for accessible and convenient public transportation.

Of the approximately 3.9M registered vehicles in PA, 47,440 are EVs (1.2%).<sup>11</sup> The transportation sector is the second largest source of emissions within the 5-county area, emitting 12.73 MTCO<sub>2</sub>e into the atmosphere in 2019. PM<sub>2.5</sub> is an air pollutant associated with numerous respiratory diseases, leading to asthma, airway inflammation, a decline in lung function, exacerbation and progression of chronic obstructive pulmonary disease (COPD)<sup>12</sup>. Approximately 200,000 premature deaths per year are caused by PM<sub>2.5</sub> from combustion emission, and 53,000 deaths are associated with PM<sub>2.5</sub> from road transportation<sup>13</sup>. An estimated 60% of PM<sub>2.5</sub> emissions in PA are from heavy-duty diesel and gas-powered vehicles<sup>14</sup>.

In addition to the specific EV users who will charge their vehicles at these EVCI installations, those living along high-traffic corridors stand to benefit from these demonstration projects because of reduced exposure to criterion air pollutants and the risk of illness associated with such exposure. If successful, these projects can help PA residents meet and exceed the national EV adoption rate and provide replicable examples for other private and public sector actors to support this transition to cleaner transportation. PEA and PGCC intend to use this small project pool to refine innovative strategies including offsetting electricity usage with solar, adding battery backup, and leveraging public land to provide publicly accessible EV charging. These types of demonstration projects will help spur additional investment in transformation-scale EVCI fueled by PGCC's intended use of NCIF funding. **Measure #4 projects are expected to reduce GHG emissions by 5,382.0 MTCO<sub>2</sub>e by 2030, and 19,640.0 MTCO<sub>2</sub>e by 2050.**

#### Major Features of Measure 4 Projects

Feature	Metric
Measure spend in LIDAC census tracts	\$1.9M out of \$3.6M (52.5%)
New Onsite Solar installed	1.36 MW
New Onsite Battery Storage installed	300 kWh
NEW EV Charging Infrastructure (EVCI) installed	19 chargers

PEA's slate of EV projects supports the transition to electric vehicles in well-trafficked corridors in the region:

- **Montgomery County** will design and implement 11 electric vehicle charging stations at publicly accessible, county-owned or leased sites to ease the transition to electric vehicles for the broader community.
- **TerraSol Energies** will install eight 150kW National Electric Vehicle Infrastructure (NEVI) Direct Current Fast Charging (DCFC) stations powered by solar canopies and backed up by battery storage each in both Coatesville, PA (in a LIDAC census tract) and Exton, PA.

#### How These Projects Advance the Measure

While efforts are being made in Southeast PA to improve public and active shared modes of transportation, electric vehicle charging infrastructure access will be important to provide critical government services and to support regional trips made by residents in areas not well served by public transit. A robust, accessible EV charging infrastructure is also key for individuals to transition from gas to electric powered vehicles en masse. The projects in this measure include commitments by local governments to install EV chargers available to the public to **encourage transition from ICE (internal combustion engine) vehicles to electric**, and a chance for the private sector to **respond to the need for fast-charging along highly traveled highway corridors** like those in Exton and Coatesville, PA. For the projects along highly traveled corridors, EVCI is coupled with onsite solar to power these EV trips and maximize the benefits of electric vehicle travel. Of note, the NEVI chargers and onsite solar installed in Coatesville, PA will improve health and emissions outcome for a LIDAC in a heavily trafficked corridor, who face prevalent burdens of

<sup>11</sup> <https://penncapital-star.com/energy-environment/pennsylvania-house-considers-road-use-fee-for-ev-owners/#:~:text=There%20were%2047%2C440%20electric%20vehicles,1%20state%20for%20EVs.>

<sup>12</sup> [PM2.5 Exposure and Asthma Development: The Key Role of Oxidative Stress - PMC \(nih.gov\)](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4404404/)

<sup>13</sup> [Contribution of on-road transportation to PM2.5 | Scientific Reports \(nature.com\)](https://www.nature.com/articles/s41598-020-70000-0)

<sup>14</sup> [PA DEP Comments on CTI ANPR.pdf \(state.pa.us\)](https://www.state.pa.us/PA_DEP_Comments_on_CTI_ANPR.pdf)

Ozone and PM2.5 in the 90-95th percentile, and toxic air releases in the 95-100th percentile. This project expands access to electrified transportation while cleaning the air for those who need it most.

PEA's green bank affiliate, PGCC, intends to access National Clean Investment Fund (NCIF) funding to support the growth of a robust EVCI in the region. These CPRG projects can provide near-term demonstrations of effective and efficient EVCI installations - catalyzing the future growth of EVCI in the area. It is important to note the Philadelphia MSA has massive GHG reduction potential via EVCI, as it is home to several critical stretches of highway that serve as major regional arteries and see significant volume daily: I-95, which connects Philadelphia to Baltimore/DC to the south and Bucks County, as well as NY/New England to the north; I-76, which connects Philadelphia to Chester County to the west (with connections to Harrisburg and Central PA) and New Jersey to the east; and I-476, which provides access to major points in Delaware and Montgomery Counties.

#### *Risks Associated with EV Projects*

Challenges to implementing the above projects include supply chains, a trained workforce to install and maintain EV chargers (expanded upon in Sections 4 and 5), and local permitting for EV charging infrastructure. PEA will support subrecipients to address these risks through technical assistance in seeking appropriate permitting and ensuring affected communities are informed of projects and the emerging opportunities for electrified transportation.

#### ***Part B: Demonstration of Funding Need***

##### *PA Lacks Policy-Level Support and Funding for Climate Projects*

Southeast PA is in Pennsylvania, the 5th most populous state in the U.S. and the second largest net supplier of energy to other states. Per the Climate and Economic Justice Screening Tool (CEJST) tool, PA ranks 9th among states in population within disadvantaged census tracts (3.1M people). Relative to other large states, including California and New York, PA lacks state-level support of energy efficiency and clean energy regarding funding sources and legislative and regulatory mandates. For example:

- PA is not part of the Regional Greenhouse Gas Initiative (RGGI) to regulate carbon emissions, which would create a stable source of funding for clean energy in the Commonwealth. PA's attempt to join RGGI has been delayed and may be halted by court challenges.
- Act 129, the Commonwealth's program to reduce electricity consumption, prohibits fuel switching, preventing these incentives from being applied to electrification strategies in buildings or homes with existing fossil fuel infrastructure.
- PA's Alternative Energy Portfolio Standard (AEPS) is a key driver of solar deployment in the Commonwealth, but it is lower compared to neighboring states, requiring 18% electricity sold to customers to be generated from "alternative" sources. Of that 18%, only 0.5% must be solar photovoltaic (PV) energy. As of 2022, PA has installed 1,195 MW of solar, ranking PA 26th in terms of statewide solar capacity installed.<sup>15</sup>
- Community solar has not been statutorily authorized at the state level. Community solar is a flexible, cost-effective solution to deliver the benefits of clean energy to households.

PEA and its green bank affiliate, the Philadelphia Green Capital Corp, have worked with partners across the region to apply for over \$2.5B of funds from the Bipartisan Infrastructure Law and Inflation Reduction Act. To date, the region has been awarded \$900M, primarily for large, high-profile projects that attract a lot of media attention, including the Mid-Atlantic Hydrogen Hub (\$750M) and the Grid Resilience and Innovation Partnerships (GRIP) award for PECO (\$100M). Smaller, community-driven projects have lagged in receiving large awards, in part because they struggle to find a platform that combines technical assistance and project know-how to put together compelling grant applications. And when more accessible, smaller-scale federal funding opportunities become available, including Renew America's Nonprofits or the Community Change Grant, applicants are often in competition with many other entities, even in the same geography, for scarce dollars. This application works to remedy these challenges by empowering a wide array of organizations and projects that otherwise struggle to access this once-in-a-lifetime federal funding.

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<sup>15</sup> SEIA, [Pennsylvania Solar](#)

The need and the demand for this type of funding and support to seek funding is evidenced by PEA's voluntary process to solicit projects and programs to include in this application. More than 100 projects and programs were submitted totaling more than \$700M. PEA prioritized eligible projects with strong GHG reduction potential and strong LIDAC components and provided scoping assistance to projects that needed to refine technical and budget details. PEA leveraged projects to ensure all other sources of funding were considered in their budgets so it could spread CPRG dollars further in the region, increasing aggregate impact. If PEA had not compiled a collaborative application, it is unlikely many of the subrecipients would have applied to this competition.

*PEA will use CPRG to fill gaps after exhausting other capital sources:*

PEA is supporting subrecipient projects that leverage other federal, state and local funds but need "last mile" funding to unlock the project's full GHG-reduction potential. PEA is proposing to leverage this \$197.8M CPRG application toward \$472M of cumulative impact and investment in the region - nearly 1.4x multiple of capital unlocked with CPRG funding. PEA's request for CPRG funds shows IRA funding sources are intended to layer and braid with other funds to maximize impact. PEA's trusted subrecipients have, and continue to, seek out complementary funding to supplement CPRG dollars. Specifically, PEA and its subrecipients have already identified additional capital sources. (Estimated amounts reflect capital to be deployed during the performance period.) This list can be found in Attachment **Budget\_PEA.pdf**.

Furthermore, PEA and PGCC plan to support these projects optimize their project budgets and use of CPRG dollars in the following additional ways:

- Technical assistance for IRA incentives: Many subrecipients will be eligible for 179D tax deductions for energy efficiency improvements to existing and new commercial buildings or 45L tax credit for energy efficiency in multi-family and single-family buildings. PEA will help these subrecipients to claim these credits.
- Green bank tools: PEA's green bank affiliate, PGCC, plans to use National Clean Investment Fund (NCIF) and Clean Communities Investment Accelerator (CCIA) funds to structure low-cost project debt and bridge financing to facilitate timely and low-friction access to rebates and tax incentives. PGCC is already working with local CDFIs and community organizations to prepare these tools ahead of NCIF or CCIA funds becoming available.

In summary, CPRG as a gap filler helps bring projects to fruition, especially for the following categories of subrecipients: 1) nonprofit projects which can struggle to access affordable capital; 2) newer technologies such as EV chargers that need additional support as early movers in the market; and 3) government institutions that are beholden to challenging budgeting realities. With its emphasis on greenhouse gas emissions reductions, CPRG funding allows subrecipients to take a long view on these projects' benefits by prioritizing impactful energy conservation measures (ECMs). The \$472M investment unlocked by CPRG, spread across projects in multiple sectors, and paired with the Measure-related Programs proposed above, will generate a transformative impact in the decarbonization of Southeast PA.

***Part C: Transformative Impact***

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PEA views CPRG funding as transformational for the region in the following ways:

- Supports shovel-ready projects that can provide near-term GHG reductions that can be implemented with this catalytic gap-filling funding
- Centers equity through projects that are in and produce direct benefit for LIDACs including the reduction of criteria air pollutants (CAPs) and hazardous air pollutants (HAPs)
- Leverages other federal and state funding sources for clean energy that may still be insufficient to fund a project, providing gap-filling funding to maximize GHG reductions and community benefits
- Builds a market of contractors, suppliers, and technical assistance for GHG-reducing projects in the region across critical sectors
- Provides a testing ground for innovative and measurable GHG-reducing strategies with the intent to both codify, replicate, and scale up successes throughout the region

On a portfolio level, PEA's slate of projects was chosen due to their replicable and scalable nature, and because many impact more than one sector, such as municipal projects that use solar upgrades to lead by example in commercial and residential projects. These projects also use other complementary sources of IRA funding to accelerate and extend impact. The long-term intent of using CPRG dollars for critical gap-filling and leverage for projects and programs that may otherwise sit on a shelf will help kick-start a scaling up of the vibrant, but nascent, clean energy economy in the region. PEA will accomplish this by building the capacity and expertise of 37 subrecipients, connecting a diverse, skilled, and well-trained workforce to the growing demand for clean energy across government, commercial, and residential sectors, and prioritizing benefits to LIDACs to ensure climate pollution reduction and quality of life improvements are perceived as one and the same.

Investments in government facilities that have broader impacts on the public but have no dedicated funding source to offset the upfront cost were also prioritized. This is especially true for departments that have non-energy operational responsibilities but are energy-intensive facilities; projects like the Philadelphia Water Department biogas utilization valve serve as a great example. For \$18/metric ton, PEA can reduce the flaring of biogas in a LIDAC census tract by moving this project to the top of an otherwise crowded list of operations and capital projects list. This has immediate implications of GHG-reductions and co-pollutants for the facilities near neighbors. Projects like the Delaware County and City of Philadelphia composting facilities show the growth potential of GHG emission reduction for otherwise difficult to fund government projects. Waste diversion is a small percentage of overall emissions in the region but has acute impacts on quality of life including localized GHG emissions and co-pollutants. This is especially true for LIDACs where waste facilities, such as landfills or trash incinerators, are more likely to be found than in other communities. These projects will be completed in the five-year performance period, but their increased capacity will lead to waste diversion well beyond the grant period - with their CPRG-funded GHG emissions reductions increasing by a factor of 22 in Delaware County and by a factor of 11 in Philadelphia County - demonstrating meaningful long-term community benefits.

PEA's projects and programs also demonstrate transformation potential through long-term strategic partnerships with institutions that have a major impact on LIDAC quality of life, including the Philadelphia Housing Authority and the School District of Philadelphia. These partnerships will lead to scalable policies that increase deployment of all-electric homes and schools for the area's most vulnerable residents, especially in sectors that present challenges due to systemic underinvestment. By codifying learnings from this grant into all projects pursued by entities with large LIDAC-serving building portfolios, PEA can extend the benefits of energy efficiency, electrification, and clean energy to LIDACs well beyond the grant period. Additionally, these initiatives show their transformational potential through market transformations that can accelerate the adoption of emerging GHG-reducing technology or practices, most prominently battery storage for solar PV and EVs. TerraSol Energies' fast charging stations powered by solar canopies and backed up by battery storage provide an illustrative example of the multiplier effect of electrification and clean energy supply on reducing GHG emissions. PEA is confident the network of implementers it is building, the combination of common sense and innovative projects it is pursuing, and the long-term LIDAC-focused strategic change it is seeding with CPRG will produce a sustainable and equitable clean energy transition in the region.

## **Section 2: Impact of GHG Reduction Measures**

### ***Part A: Magnitude of GHG Reductions from 2025 to 2030***

#### ***Emissions Profile in Southeast PA***

Southeast PA, which includes Philadelphia and its surrounding counties (Bucks, Chester, Delaware, and Montgomery), faces a critical challenge in mitigating GHG emissions. In 2019, emissions from all sectors in the Philadelphia MSA (which includes select counties in Southern New Jersey) were just over 76M metric tons of carbon dioxide equivalents (MTCO<sub>2</sub>e). Emissions from Southeast PA accounted for about 53 MTCO<sub>2</sub>e, or just under 70% of the total MSA emissions. Most of these emissions are driven by commercial buildings (15.768 MTCO<sub>2</sub>e) and residential building energy consumption (9.772 MTCO<sub>2</sub>e), and transportation (12.73 MTCO<sub>2</sub>e). To mitigate GHG emissions in SEPA, concerted efforts must focus on reducing emissions in these key sectors. PEA's proposed CPRG project portfolio addresses the highest source of emissions (buildings) while incorporating key demonstration

projects that can be learned from and replicated to reduce GHG emissions from transportation sources. If GHG emission levels continue to fall at the same rate as they did between 2015-2019, SEPA will not reach net zero until 2066, failing to meet the 2050 goal held by Philadelphia, Bucks, and Montgomery counties. Implementing projects to enhance energy efficiency in commercial and residential buildings, transitioning to renewable energy sources and electric vehicles, will significantly contribute to lowering emissions. It is imperative to align with local, state, and national climate targets and ensure a sustainable future for the region. PEA is confronting this call for action by targeting CPRG dollars toward high impact projects that leverage other funds toward deep emissions reductions where LIDACs benefit first.

*Magnitude of GHG Emission Reductions (MTCO<sub>2</sub>e)*

	2025-2030	2025-2050
GHG Emission Reductions from Measure 1 Projects	46,168.2	452,943.1
GHG Emission Reductions from Measure 2 Projects	32,988.3	301,409.7
GHG Emission Reductions from Measure 3 Projects	129,102.8	164,083.5
GHG Emission Reductions from Measure 4 Projects	5,382.0	19,640.0
<b>Cumulative GHG Emission Reductions from all Measures</b>	<b>213,641.4</b>	<b>938,076.3</b>

*\*all reductions are measured in estimated metric tons (MTCO<sub>2</sub>e)*

***Part B: Magnitude of GHG Reductions from 2025 to 2050***

As the above table shows, the magnitude of GHG reductions resulting directly from CPRG funding increases more than five-fold during the second performance period, when compared with the first. This increase is proportionately greater than that of the total project (100%) GHG emissions savings resulting from these projects, indicating the **CPRG funding allocations have been targeted to create transformational change and maximize the impact of the CPRG funds.**

***Durability***

These ongoing GHG savings demonstrate the durability of the funded measures; investments in the built environment and transportation infrastructure are structural changes that will continue to drive consumers' and business owners' decision-making for decades to come. Most of the projects and measures in this application support this acceleration of building and vehicle electrification. Decisions made today on measures and equipment will be locked in for decades until a homeowner or landlord makes an end-of-life replacement – and even at that juncture, decisions will continue to be made based on the existing electrified infrastructure. Now is the right time to prioritize efficient, equitable, and replicable retrofits to meet fast-approaching climate goals.

New construction and retrofits will allow commercial and residential subrecipients to avoid future emissions while presenting an additional opportunity to learn valuable lessons and share exemplary projects as PEA continues collaborating on high-level discussions about Building Performance Standards and advanced building codes. When combined with building codes that regulate performance in specific instances like new construction or major renovations, BPS are powerful policy tools that provide a lifecycle approach to building performance and can empower state and local governments to deliver on their energy and carbon goals for the building sector<sup>16</sup>.

Projects proposed in this application will also inform future standards for buildings that LIDACs rely on heavily, including affordable housing, naturally occurring affordable housing, and community-facing buildings like schools and health and recreation centers. These projects can serve as models for how to implement and scale distributed energy resources that clean and strengthen the regional energy grids and reduce costs for community-serving

<sup>16</sup> <https://www.energycodes.gov/BPS>

institutions. These shifts will reduce the GHG emissions that impact LIDACs now and into the future.

### ***Part C: Cost Effectiveness of GHG Reductions***

As required in the NOFO, this application quantifies emission reductions that will occur due to EPA's CPRG implementation grant funding. Where CPRG funding represents a fraction of the total funding for a GHG-reduction measure, total estimated MTCO<sub>2</sub>e reductions are scaled by the same fraction to quantify the emissions savings associated with CPRG funding. Since the intent of this application is to accelerate transformational change, PEA is presenting a second cost-effectiveness metric to show how this funding enables these important demonstration projects to move forward. With these projects, PEA is tackling the most challenging sectors of its communities in a state that has higher-than-average labor/construction costs<sup>17,18</sup> and faces regulatory barriers to clean energy implementation throughout the Commonwealth. This second metric quantifies 100% of all projects' MTCO<sub>2</sub>e reductions due to the CPRG investment, showing the broader impact of the CPRG investment.

#### ***Cost-Effectiveness Measures***

	<b>CPRG Dollars Invested per MTCO<sub>2</sub>e Saved</b>			
	<i>CPRG Funding / MTCO<sub>2</sub>e Savings from CPRG Funding 2025-2030</i>	<i>CPRG Funding / MTCO<sub>2</sub>e Savings from CPRG Funding 2025- 2050</i>	<i>CPRG Funding / MTCO<sub>2</sub>e Savings from Total Measure 2025- 2030</i>	<i>CPRG Funding / MTCO<sub>2</sub>e Savings from Total Measure 2025- 2050</i>
Measure 1	\$1,980.13	\$201.83	\$1,503.92	\$159.25
Measure 2	\$2,379.98	\$260.48	\$602.59	\$83.94
Measure 3	\$135.49	\$106.60	\$126.84	\$96.26
Measure 4	\$644.33	\$176.57	\$442.25	\$121.99
<b>Cumulative Total</b>	<b>\$893.51</b>	<b>\$203.49</b>	<b>\$566.73</b>	<b>\$111.01</b>

*\*primary metric is shaded, column 1*

### ***Part D: Documentation of GHG Reduction Assumptions***

The Technical Appendix and corresponding GHG Emissions Reduction Calculations Spreadsheet, provided as attachments to this Application, outline the methodology, factors and assumptions used to calculate MTCO<sub>2</sub>e savings for all projects and measures. PEA took a conservative approach to these calculations (along with a strong subrecipient selection process to ensure viable, funded shovel-ready projects) to assure the EPA these savings will be realized. Only the GHG emissions savings resulting from the CPRG investment have been captured. For example, after the ten-year lifespan of EV chargers is reached, emissions savings are no longer included in the calculations even though it likely they will be replaced with superior-technology chargers when they reach end of life. Additionally, PEA remained mindful of the lifecycles and performance standards of other interventions; a 0.5% annual degradation rate, for instance, was applied to all solar installations, and GHG savings are not captured for any project until the project is scheduled to be on-line. With these calculations, PEA also remained mindful of the lifecycles of other interventions to be implemented as part of this project (i.e., new-technology heat pumps have a lifespan of 20-25 years, and solar panels and canopies have a life of approximately 25-30 years).

#### **Lifecycle Emissions Savings**

To account for lifecycle emission savings, an overlay analysis was performed by adding upstream CO<sub>2</sub>e emissions factors to each of the fuel source factors used in all projects. The upstream lifecycle emissions of solar PV systems

<sup>17</sup> Roof Online. Relative Construction Costs by State. 2024. [Relative Construction Costs by U.S. State \(2024\) \(roofonline.com\)](https://www.roofonline.com/)

<sup>18</sup> Statista. Weekly Wages per Employee in the Private Construction Sector in the United States in 1st Quarter of 2023, by State and Territories. [Construction sector wages in the U.S. by state | Statista](https://www.statista.com/chart/111111/Construction-sector-wages-in-the-U.S.-by-state/)



were also factored in by reducing aggregate solar PV CO2e generation savings by 9%. These additional CO2e factors are shown in Table 1.

**Table 1. Upstream Emissions Factors** <sup>19 20 21</sup>

Lifecycle Emissions Factors		
Electricity	0.1472688	lbs CO2e/kWh
Solar	0.0727525	lbs CO2e/kWh
Natural Gas	0.2055386	lbs CO2e/ccf
Gasoline	0.348275	lbs CO2e/gallon
Propane	0.1112383	lbs CO2e/gallon
Oil	0.8333333	lbs CO2e/gallon
Diesel	0.1629942	lbs CO2e/gallon
Total Electricity GHG Factor	0.8075048	
Less Solar Lifecycle Factor	0.7347522	
Solar Savings vs Grid Electricity	91%	

Overall, the addition of upstream emissions increased the MTCO2e reductions funded by CPRG by 4.2%, and improved the cost-effectiveness of the measures accordingly, as shown in Table 1.

**Table 2. Additional Savings and Cost-Effectiveness due to Lifecycle Considerations: All Measures Combined**

	Total GHGs Saved (MTCO2e)				Cost:Benefit			
	Total Projects	Total Projects	CPRG Funded	CPRG Funded	CPRG Funding /MTCO2e Savings from CPRG Funding	CPRG Funding /MTCO2e Savings from CPRG Funding	CPRG Funding /MTCO2e Savings from Total Projects	CPRG Funding /MTCO2e Savings from Total Projects
Lifecycle	350,550.3	1,784,264.9	222,516.4	977,405.8	\$857.87	\$195.30	\$544.55	\$106.99
As Calculated	336,829.0	1,719,572.0	213,516.4	977,405.8	\$893.51	\$203.49	\$566.73	\$111.01
Additional Savings	13,721.3	64,692.9	48,875.0	39,329.5	\$35.64	\$8.19	\$22.18	\$4.02
	4.1%	3.8%	4.2%	4.2%	4%	4%	3.9%	3.6%

Lifecycle impacts are critically important to consider, as it is well understood they are undercounted globally, and often substantially. In the U.S., oil and gas fields emit three times more methane than the government has reported<sup>22</sup>. The full spreadsheet analysis is available upon request.

### Section 3: Environmental Results - Outputs, Outcomes, and Performance Measures

#### Part A: Expected Outputs and Outcomes

PEA's CPRG proposal will spur lasting innovation and durable GHG reductions through investments in public infrastructure, by seeding early adopters for innovative solutions, and by investing in long-view programs. PEA is confident the network of implementers it is building, the combination of common sense and innovative projects it is pursuing, and the long-term LIDAC-focused strategic change it is seeding with CPRG will produce a sustainable and equitable clean energy transition in the region. The following table identifies expected outputs and outcomes related

<sup>19</sup> International Energy Agency Life Cycle Upstream Emission Factors 2023 (Pilot Edition). IEALifeCycleUpstreamEmissionFactors2023-PilotEdition.XLS (live.com)

<sup>20</sup> Carnegie Endowment for International Peace. Breaking Down the Barrel: Tracing GHG Emissions Through the Oil Supply Chain. Breaking Down the Barrel: Tracing GHG Emissions Through the Oil Supply Chain - Carnegie Endowment for International Peace

<sup>21</sup> Stanford Scope 3 Emissions Program. Scope 3 Emissions from Fuel & Energy Activities. scope-3-emissions-from-fuel-and-energy-activities-march-2023.pdf (stanford.edu)

<sup>22</sup> Sherwin ED, Rutherford JS, Zhang Z, et al. US Oil and Gas System Emissions from Nearly One Million Aerial Site Measurements. Nature. 627: 328-334. 2024. US oil and gas system emissions from nearly one million aerial site measurements | Nature

to the PCAP measures that encompass the project portfolio (listed fully on the Cover Page). These Outputs and Outcomes focus on the highest impact metrics to ensure benefits are felt meaningfully for LIDACs, and innovative project learnings can be replicated through 2050 in a material way.

#### Quantitative Outputs and Outcomes by Measure

Measure	2030 Quantitative Outputs	2030 Qualitative Outcomes
Measure 1: Actions to Support Decarbonization of Local Government Operations	kW rooftop solar panels installed kWh of battery energy storage installed # LIDAC program participants	CO, Lead, NOx, PM2.5, SO2, Ozone, VOCs, Other HAPs (air toxics)  Addressing the following prevalent burdens in SEPA LIDACs: Asthma rate Energy burden Historic underinvestment Households below 100% federal poverty level Housing burden Linguistic isolation Low high school attainment Low housing value Low incomes Rates of lead paint Unemployment
Measure 2: Actions to Implement Energy Efficiency, Electrification, and Clean Energy for Residential Buildings	# buildings retrofitted # schools retrofitted # new construction projects # buildings that meet LEED or other building standard	
Measure 3: Actions to Implement Energy Efficiency, Electrification, and Clean Energy for Commercial Buildings	# EV chargers installed # homes weatherized # homes retrofitted # students impacted (per school & total)	
Measure 4: Actions to Transition Light Duty Vehicles to Low- or No-Carbon Emission Vehicles	# jobs (direct and indirect) -- # staff hired to implement/oversee any projects -- # construction/maintenance/repair workers hired -- # construction/maintenance/repair workers trained \$ energy savings (commercial) \$ energy savings (residential) \$\$ revenue from SREC sales \$\$ energy bill savings - residential and commercial Lbs. weight of waste diverted from landfills or waste-to-energy facilities	

#### Outcomes Discussion

PEA's CPRG proposal encompasses LIDAC census tracts with prevailing burdens that will be addressed by project activities. This includes funding projects that reduce energy use in census tracts experiencing extreme energy burden, prioritizing the removal of onsite fossil fuel combustion systems in schools serving LIDACs suffering from asthma, and supporting efforts that bring green jobs to historically underinvested neighborhoods. While these outcomes cannot be quantified at the census tract level within the grant performance period, PEA is ready to bring the learnings of these projects to scale, and to build on these project successes to drive further investment where it's most needed in Southeast PA. Scaling projects will require PEA and its subrecipients to elevate lessons learned to inform replicability and identify challenges to success that may result in needed market shifts. PEA will support these processes, and use its established relationships with governments, businesses and regulatory agencies to drive the changes needed to increase regional resilience to climate change while growing the economy and lifting people out of poverty.

#### **Part B: Performance Measures and Plans**

Achieving PEA's Outcomes and Outputs outlined in Part A requires trackable performance measures and a way to ensure progress on these measures. Given PEA's proposed project portfolio, performance measures that drive timely implementation, effective procurement processes and meaningful engagement are essential. Thus, PEA will first agree on these foundational performance measures with all subrecipients, and for initiatives PEA is leading:

- Meet stated schedule or timeline;
- Demonstrate compliance with EPA's procurement processes, tracking minority and women-owned business respondents as well as those hired;
- Demonstrate compliance with Build America Buy America and Davis Bacon and Related Acts;
- Establish and follow a communications plan for project stakeholders;
- Participate in PEA-led subrecipient convenings to share learnings and incorporate best practices

PEA will seek subrecipient feedback for any additional performance measures that may be helpful to track in pursuit of accomplishing outputs and outcomes for given measures. To assure progress, PEA will take a two-pronged approach. First, it will implement a subrecipient agreement with each project lead organization upon CPRG award announcement. Second, it will establish a regular reporting process and touchpoint cadence to support subrecipients as they implement initiatives, and to ensure their work continues to drive toward intended outputs and outcomes in the five-year performance period. The regular reporting process will follow controls established by PEA Finance and technical teams, to review subrecipient initiative progress and release CPRG funding following EPA reporting schedules. PEA will support this required reporting process by establishing a touchpoint cadence with subrecipient groups, organized by entity or initiative type, that shares methodologies, technology, data sources, inputs and assumptions to facilitate cross-subrecipient learning and consistent reporting across the project portfolio. This performance measure plan will also inform PEA's commitment to capture learnings from individual projects that can lead to innovation in the markets and achieve replicability at a scale that meets the challenge of climate change. To quantify and disclose GHG emission reductions, PEA will follow established methodologies to report to EPA. PEA will extend these methods to subrecipients to increase knowledge and expertise in these organizations and affirm the rigorous nature of reports. In LIDACs, PEA will seek qualitative methods to track reductions in HAP and CAP.

### ***Part C: Authorities, Implementation Timeline, and Milestones***

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In establishing its portfolio of projects for this CPRG application, PEA has affirmed each project lead's authority to implement. It has also clarified these responsible parties' roles and sought to understand other entities whose cooperation is essential to project success. This authority to implement, roles and responsibilities, and critical stakeholders are articulated in the attached letters of commitment from every subrecipient. There is additional detail about implementing authorities under each measure description in the region's Priority Climate Action Plan (PCAP), led by the Delaware Valley Regional Planning Commission, attached to this proposal.

Subrecipients include local governments at the municipal, county and regional level, who are responsible for delivering climate pollution reducing improvements to publicly accessible buildings like schools, libraries, community centers, health centers, and geriatric facilities in addition to critical government service buildings that house police, fire, and public works services. Programs supporting energy projects in residences for low-income homeowners and low-income multi-family renters are led by public service entities as well as long-time nonprofit and for-profit partners. Finally, PEA is proud to apply on behalf of projects and programs that benefit local, small and minority-owned businesses, as well as nonprofits who provide critical social services like workforce development, environmental education and food distribution. These project leads assure successful initiative completion, meeting performance measures that result in successful outputs and outcomes. These project leads will be responsible for regular reporting to the EPA, and for transparency to their stakeholders including the public, program participants or occupants and tenants of properties receiving pollution-reducing improvements. While individual projects may vary from the following timeline, this timeline reflects when measurable outputs and outcomes may be achieved at the PCAP measure level, following initiative milestones and reporting cycles.

Based on submitted subrecipient budgets and timelines, most projects will take an estimated 18 months to complete. For Measure 1, based on project readiness, PEA expects projects to begin over three phases during the 5-year performance period. For Measure 2, PEA is proposing projects with early timelines, whose success can inform Measure 2 programs that will operate for the full 5-year performance period. For Measure 3, PEA proposes a curated set of projects that serve or benefit LIDAC members. Because of this nuance, PEA proposes a longer timeline to allow for engagement with these communities and avoid disruption of critical social services. For Measure 4, PEA is proposing shovel-ready projects that are innovative, can support the public's transition to EVs immediately, and whose success can inform other EVCI installation projects captured in Measure 1.

	Award prep: July-Sep 2024	Oct 2024 - Mar 2025	Apr -Sep 2025	Oct 2025 - Mar 2026	Apr -Sep 2026	Oct 2026 - Mar 2027	Apr -Sep 2027	Oct 2027 - Mar 2028	Apr -Sep 2028	Oct 2028 - Mar 2029	Apr -Sep 2029	
<b>PCAP GHG Reducing Measures</b>	Quality assurance project plans (subaward agreements)											
Measure 1: Actions to Support Decarbonization of Local Government Operations												
Phase I Projects		Design	Bidding/ Procurement	Installation/ Construction	Commission Project							
Phase II Projects				Design	Bidding/Procure ment	Installation/ Construction	Commission Project					
Phase III Projects						Design	Bidding/ Procurement	Installation/ Construction	Commission Project			
Measure 2: Actions to Implement Energy Efficiency, Electrification, and Clean Energy for Residential Buildings												
Measure 2 Projects			Design	Bidding/ Procurement	Installation/ Construction	Commission Project						
Measure 2 Programs (6)		Launch	Outreach	Implementation	Implementation	Implementation	Implementation	Implementation	Implementation	Implementation	Implementation	
Measure 3: Actions to Implement Energy Efficiency, Electrification, and Clean Energy for Commercial Buildings												
Measure 3 Projects		Design	Design	Bidding/ Procurement	Bidding/ Procurement	Installation/ Construction	Installation/ Construction	Commission Project				
Measure 3 Program (1)		Launch	Outreach	Implementation	Implementation	Implementation	Implementation	Implementation	Implementation	Implementation	Implementation	
Measure 4: Actions to Transition Light Duty Vehicles to Low- or No-Carbon Emission Vehicles												
Measure 4 Projects		Design	Bidding/ Procurement	Installation/ Construction	Commission Project							
Measure 5: Actions to Expand and Improve Transit												
Measure 6: Actions to Implement Bicycle, Pedestrian and Active Transportation Improvements												
Measure 7: Actions to Implement a Clean Electricity Grid and Ensure Grid Reliability												
Measure 8: Actions to Reduce Waste and Better Manage Waste Generated												
Measure 9: Actions to Reduce Emissions at Wastewater Treatment Plants and to Increase Generation of Biomethane												
												Final Report
												120 days post performance period (Jan 2030)

## Section 4: Low-Income and Disadvantaged Communities

### ***Part A: Community Benefits***

#### LIDAC Benefits

The Southeast PA region encompasses a diverse mix of urban, suburban, and rural communities. More than 1.57M people (about the population of West Virginia) reside in low-income and disadvantaged communities (LIDACs), over 37% of the region's total population. These communities are disproportionately affected by air pollution and climate impacts, due to heightened exposure to risks and inaccessibility of resources to mitigate these risks. This inequality stems from historical discriminatory practices in housing, education, and employment.

These communities face multiple prevalent burdens, including high energy and housing costs, wastewater discharge, and high childhood asthma rates. The childhood asthma rate (associated with air pollution and GHG emissions) in Philadelphia is nearly 21%, more than five times the national average. Hispanic and Black children in Philadelphia are over four times more likely to be hospitalized for asthma related complications than non-Hispanic white children. Urgent, equitable investment and systemic reforms are imperative to mitigate these challenges and build resilience. This application prioritizes projects, programs, and initiatives that address prevalent burdens in LIDACs, while achieving significant GHG reductions. \$155M or 78.3% of the requested CPRG would be spent on projects and programs in LIDACs. Of total program funds, nearly \$32M will go to communities with high asthma rates, over \$50M will be spent in LIDACs with high energy burdens and over \$61M will be spent in LIDACs facing historic underinvestment. (Note these totals are not exclusive, as some of the targeted communities are burdened in multiple categories).

CPRG-funded projects in these LIDACs reduce the impact of these burdens by fostering clean and equitable infrastructure throughout the region. Included within this proposal is a program to retrofit 20 Philadelphia schools with much needed energy efficiency upgrades: LED lighting, new HVAC systems, and solar panels. Studies show improving air quality in schools through HVAC upgrades both reduce childhood asthma risk and help to improve educational outcomes. In another project, PEA proposes to help finance 780 kW of solar and enabling upgrades across seven area healthcare centers and homeless shelters, investing in critical infrastructure to improve health outcomes and climate resilience of these communities. The application also includes electrification, solar, HVAC, lighting, and other energy efficiency rehabilitation measures for over 5,500 affordable housing units across the region via public, private and nonprofit partners. These projects will reduce the energy burdens of tens of thousands of lower income Philadelphians while improving their health and wellbeing.

#### Potential Negative Impacts and Mitigation Strategies

PEA has assessed its project portfolio to identify potential negative impacts on LIDACs, and to establish proactive mitigation strategies. These include:

Potential Negative Impact: Community members and residents may be disrupted by construction projects, occurring in their homes or businesses, or by limited access to commercial and municipal spaces, like schools, activity centers, and libraries.

Mitigation Strategy: PEA will work to sequence construction activities to minimize disruptions to community members and residents and will ensure there is a publicly available feedback system to track and monitor public comments about ongoing disruptions.

Potential Negative Impact: Community members and residents will feel uninformed about the changes being made in their communities and will have limited understanding of how these changes will benefit them.

Mitigation Strategy: PEA has a long history of meaningful engagement with LIDACs through its direct-service programs and network of partner providers and will prioritize public engagement sessions where community members can learn, either in-person or virtually, about the direct benefits that will prioritize their health and wellness. From there, PEA will work with community-based organizations to facilitate a feedback process for consistent feedback. These strategies are outlined in more detail in Part B: Community Engagement.

Potential Negative Impact: Community-based organizations and nonprofits implementing CPRG-funded projects may have limited capacity to pursue additional funding to support their efforts.

Mitigation Strategy: PEA will provide technical assistance to support community-based organizations and nonprofits in accessing IRS Elective Pay, utility rebates, and state market Solar Renewable Energy Certificates to further lower project costs and leverage CPRG dollars more effectively. PEA will also help to craft procurement language to ensure eligible entities pass through the benefits of 179D (Commercial Buildings Energy-Efficiency Tax Deduction) Credits for energy efficiency measures to end-users, where applicable.

### ***Part B: Community Engagement***

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PEA is proud to have compiled a slate of projects that advance the goals set forth in the region's Priority Climate Action Plan (PCAP), led by the Delaware Valley Regional Planning Commission. DVRPC's stakeholder approach focused on building a foundation of relationships with community-based organizations to elevate the voices of LIDACs. Stakeholder input was collected through the PCAP steering committee and subcommittees, through community and technical focus groups, a project website, a short public feedback form, and one-on-one calls. In addition, PEA hosted a request for information that was circulated to the PCAP engagement list and beyond to collect potential CPRG-eligible projects and programs from local government, nonprofits, school districts, and affordable housing providers, among others for inclusion in this application.

PEA's CPRG project portfolio responds to input by LIDACs by prioritizing GHG-reducing projects that:

- Directly address energy burdens experienced by the Philadelphia region's poorest residents at home
- Invest in the next generation of climate leaders by activating holistic Philadelphia Public School efficiency, electrification, and renewable energy projects
- Alleviate quality of life issues that intersect with GHG-reduction needs including active transit and pedestrian safety, and waste diversion and management
- Improving public-facing local government infrastructure while leading by example

PEA will spend \$155M, nearly 80% of all CPRG project dollars, in federally designated LIDAC census tracts. Even the projects sited in non-LIDAC census tracts provide benefits to low-income residents, such as:

- Township libraries and community centers provide services and programming for low-income residents
- Two projects enhance the Philadelphia Water Department's ability to serve the city population, 77% of whom live in LIDACs
- EV charging infrastructure leads to reduced air pollution across the region, improving air quality for all

PEA is committed to equitably manage its diverse slate of subrecipients set to receive funding through this application, and ensure they are situated to meaningfully engage with LIDAC members and incorporate findings from those engagements into their work during the life of this grant and beyond. Firstly, PEA has outlined specific engagement-related outcomes in Section 3 and will commit to holding its sub-awardees accountable as they strive to meet those goals during regular check-ins. These include:

- Lower energy demand and residential/commercial energy expenditures
- Reduced energy bills for LIDAC residents and throughout the applicant's jurisdiction
- Reduced exposure to hazardous air pollution or unhealthy ambient air quality
- Increased staff capacity to implement GHG reduction measures
- Enhanced level of community engagement, as measured by an increased number of ongoing actions to engage with organizations and residents of LIDAC, and other interested parties
- Number of high-quality jobs created throughout the applicant's jurisdiction and in LIDACs
- Increased resilience to climate change impacts as measured by the number of buildings or Census tracts that meet certain resiliency standards

PEA will act as a coordinator between all CPRG subrecipients, to monitor progress and successes, ensure effective delivery of community benefits, and to ensure compliance with subrecipient agreements that will include commitments to prioritize hiring Women-Owned and Minority-Owned Businesses as vendors, contractors, and other

partners, and participate in regular convenings of PEA's CPRG sub-awardees to share learnings, codify best practices, and adopt positive changes at scale across projects.

Additionally, due to its placement as a municipal agency with a long history of providing direct service programs to LIDACs, PEA is well-suited to coordinate engagement and benefits between city offices (including the Mayor's Office and the Office of Sustainability), convening organizations (including Green Building United, the Philadelphia Association of Community Development Corporations), and community-based organizations (like Philly Thrive and the HERE for Climate Justice Coalition) to ensure ongoing engagement and continuous learning. Moving forward, PEA intends to support the implementation of the community engagement foundations in the PCAP, found on pp. 7-9, for all its subrecipients. This ongoing work may include developing an outreach and engagement strategy with a wide variety of engagement techniques, developing accessible engagement opportunities like listening sessions, Q&A sessions, and door to door visits, and provide a comprehensive list to communities, or creating a community working group or advisory board comprised of LIDAC members.

## **Section 5: Job Quality**

PEA will ensure CPRG implementation grant funds generate high-quality jobs with a diverse, skilled workforce and support "high road" labor practices for jobseekers in Southeast PA. Underserved career-seekers in PA face a range of challenges and barriers preventing their participation or advancement in the labor market, including access to childcare, reliable transportation, prior criminal record, income level, literacy, language and other barriers. PEA leverages expertise, insight, and experience of stakeholders and partners to deliver wraparound services to address barriers including those listed above.

PEA is a subrecipient of Southeast PA's successful Good Jobs Challenge to create the Coordinated Southeast PA Workforce Development System. A program of the U.S. Economic Development Administration, GJC infused \$22.8M to support workforce development within the health care, construction, and energy sectors. PEA serves as the backbone organization for the energy sector in the region. In this role, PEA runs three solar and green construction workforce training programs - Bright Solar Futures (BSF) in partnership with the School District of Philadelphia, Bright Solar Futures Opportunity Youth (BSF OppY) in partnership with PowerCorpsPHL, and Green Retrofit Immersive Training Program (GRIT) - and provides technical assistance to export these programs throughout Southeast PA. As such, PEA already has processes and tools in place to ensure all Good Jobs Principles (Recruitment and Hiring, Benefits, Diversity, Equity, Inclusion, and Accessibility, Empowerment and Representation, Job Security and Working Conditions, Organizational Culture, Pay, and Skills and Career Advancement) are reflected in workforce development efforts. This partnership allows PEA to export its low-volume, high-touch workforce philosophy across Southeast PA, including wraparound services to ensure accessibility and successful placement and maintenance of long-term good jobs. This work aligns with CPRG Implementation grant timing and will complement projects seamlessly.

PEA also intends to leverage support made available through PA's Commonwealth Workforce Transformation Program to support high road labor practices amongst all GHG reduction projects. The CWTP will drive up to \$400M in funding towards workforce development across PA over the next five years. This model initiative will be the largest infusion in funding for workforce training in PA history and could support as many as 10,000 new jobs. The CWTP invests in jobs through on-the-job training and is intended to break down employment pathway barriers for underserved populations by allowing supportive services (e.g., transportation and childcare) to be eligible reimbursement costs for the new employees hired under the BIL/IIJA or IRA project. Additionally, the CWTP requires employers to follow prevailing wage and Davis-Bacon laws. To build on this experience and PEA's role as a leader in the workforce development space, PEA and its subrecipients plan to:

- Collaborate with organizations who have expertise in job quality, including Philadelphia Works, the city's workforce development board, as well as workforce development boards in Bucks, Montgomery, Delaware, and Chester counties.
- Collaborate with the City of Philadelphia's Bipartisan Infrastructure Law Committee and Inflation Reduction Act Forum to ensure CPRG is fully integrated into and connected with other related federally funded workforce development opportunities such as Plug In Philly, "a workforce development program developed



to recruit and train 45 diverse Philadelphians for careers in electric vehicle supplies and equipment (EVSE)<sup>23</sup>.”

- Work with union leaders representing occupations highly represented in the energy efficiency space, including Electricians, Floor, Ceiling, and Wall (FCW) Insulation Workers, Plumbers, Pipefitters, and Steamfitters (Plumbers), Construction and Building Inspectors, including energy auditors and Home Energy Rating System (HERS) raters; and Heating, Air Conditioning, and Refrigeration (HVAC/R) Mechanics and Installers.
- Leverage pipeline of diverse, well-trained, local trainees of PEA’s own aforementioned workforce development programs as well as those run by its CPRG Subrecipients, e.g. Energy Coordinating Agency’s Heat Pump Training Lab, Habitat for Humanity’s Carpentry Fellowship, and YouthBuild’s hand-on student training, to fill demand created by CPRG projects and projects.
- Partner with community-based organizations to ensure job seekers and workers have access to wraparound services needed to support the growth of their careers, including transportation, childcare, professional development, mentoring, mental and behavioral health supports, food security support, etc.
- Utilize essential guidance provided by the US Department of Labor, including “Good Jobs in Federal Investments: A Toolkit for Employers, Workers, and Government<sup>24</sup>,” the “Good Jobs Initiative Job Quality Check List<sup>25</sup>,” and “Good Jobs in Federal Investments: Data and Reporting Appendix<sup>26</sup>.”
- Yield 250-500 jobs across the following occupations as part of its Good Job Challenge commitment: Solar Installers, Solar Designers and Salespeople, Equipment Suppliers, Teachers and Trainers, Energy Auditors, Weatherization and Solar Technicians, and Utility Line Workers.
- Attempt to exceed the minimum requirements for minimum participation requirements on municipal projects set forth by Economic Opportunity Plans on City of Philadelphia municipal projects.

## Section 6: Programmatic Capability and Past Performance

### Part A: Past Performance

Project Title	Assistance Agreement #	Funding Agency & Assistance Listing #	Brief Description	Contact
Bright Solar Futures	DE-EE0008572	U.S. Department of Energy - Golden Field Office 81.087	Bright Solar Futures developed a 3-year curriculum and piloted a robust solar energy training program that can scale beyond the period of performance. The initiative prepared Philadelphia’s young people for jobs in the solar energy industry, diversified the solar sector, while meeting employer demand for a trained workforce.	Program Manager Thomas L. Rueckert 202-586-0942 thomas.rueckert@e.e.doe.gov
Philadelphia Energy Authority Congressionally Directed Spending Built to Last Project	DE-EE0010124	U.S. Department of Energy - Golden Field Office 81.042	PEA developed a home improvement program called Built to Last that integrates and weaves together funding from existing housing repair programs to reduce their deferral rates while holistically restoring existing low-income homes. In addition to reestablishing the homes as secure, healthy and affordable	Program Manager Chelsea E. Mervenne 202-823-2984 chelsea.mervenne@hq.doe.gov

<sup>23</sup> <https://www.phila.gov/2024-02-12-city-wins-1-47m-federal-grant-for-workforce-development-pilot-program-focused-on-creating-jobs-for-diverse-citizenry-in-electric-vehicle-industry/>

<sup>24</sup> <https://www.dol.gov/sites/dolgov/files/OPA/GoodJobs/Toolkit/Good-Jobs-Toolkit.pdf>

<sup>25</sup> <https://www.dol.gov/general/good-jobs/job-quality-check-list>

<sup>26</sup> <https://www.dol.gov/sites/dolgov/files/OPA/GoodJobs/Toolkit/Good-Jobs-Toolkit-Data-Appendix.pdf>

			places to live, the Built to Last model makes the homes resilient.	
Built to Last: Restoring Safe, Healthy, Affordable Homes	DE-EE0010269	U.S. Department of Energy - Golden Field Office 81.042	The U.S. Department of Energy awarded PEA a \$2M Weatherization Assistance Program Enhancement and Innovation grant, which will allow Built to Last to demonstrate the applicability of whole-home repair in conjunction with the Weatherization Assistance Program. Using the grant funding, PEA will establish procedures for incorporating deep energy measures in low-income home repairs.	Program Manager Chelsea E. Mervenne 202-823-2984 chelsea.mervenne@hq.doe.gov
Good Jobs Challenge	ED22HDQ307127	U.S. Department of Commerce, Economic Development Administration 11.307	Philadelphia Works, Philadelphia's Workforce Development Board, is convening a regional coalition of partners to design and scale a Coordinated Southeast PA Workforce Development System that seeks to develop and launch training programs designed to meet employers' needs for talent and build the skills of our regional workforce within targeted growth industries driving the creation of quality jobs in this region. PEA'S target is to place 500 people into good energy jobs.	Manager of Workforce Partnerships, Philadelphia Works Ashlee Phillips 215-963-3485 APhillips@philaworks.org
LED Streetlighting Bond	N/A	US Bank (Trustee)	Philly Streetlight Improvement Project is a multiyear effort to convert nearly 130,000 high pressure sodium luminaries to light emitting diode luminaries and upgrade to a smart lighting management system. The Philadelphia Energy Authority issued the \$91.2M sustainability bond on behalf of the City of Philadelphia and manages payment approvals and disbursements each month in partnership with the City Treasurer's Office and the Trustee, US Bank.	N/A

### **Part B: Reporting Requirements**

In each of the above-listed agreements, Philadelphia Energy Authority has developed performance measures, milestones and tasks to accurately track and report on activities to the issuing agency on their preferred reporting schedule. Using this proven framework of proactive planning and timely outcome management, PEA has shown its ability to achieve milestones and adequately report progress with its partners.

Project Title: Bright Solar Futures

- Successfully met all quarterly and annual reporting requirements. Final report submission was delayed by staff transitions but has been completed.

Project Title: Philadelphia Energy Authority Congressionally Directed Spending Built to Last Project

- Successfully meeting all reporting requirements in a timely manner for all parties involved.

Project Title: Built to Last: Restoring Safe, Healthy, Affordable Homes

- Successfully meeting all reporting requirements in a timely manner for all parties involved.

Project Title: Good Jobs Challenge

- Successfully meeting all reporting requirements in a timely manner for all parties involved.

Project Title: LED Streetlighting Bond

- Interim and/or final reports - PEA and the City are responsible for submitting annual reports to the second party verifier that certified the project met Sustainability Bond requirements including proceeds spent, fixtures converted, kWh and cost savings, and GHG emissions reductions. Upon completion of the project's construction phase, PEA will also verify the performance guarantee met by the project's energy service provider in accordance with the projected kWh and energy costs savings per the Investment Grade Audit.

### ***Part C: Staff Expertise***

Resumes for the Philadelphia Energy Authority's project team are submitted as an attachment to this application. They include Emily Schapira, President & CEO, Katie Bartolotta, Vice President of Policy & Strategic Partnerships, Grace Hancock, Senior Manager of Policy & Strategic Partnerships, Maxine Dixon, Director of Operations, Rachid Echane, Director of Finance, Lisa Shulock, Commercial Programs Director, Andrew Niemynski, Residential Program Manager, Shailean Hardy, Residential Program Coordinator, and Alexis Lounsbury, Administrative Coordinator.

The Philadelphia Energy Authority aims to be a catalyst for the growth of a robust, equitable, diverse clean energy economy in Philadelphia through the development of long-term energy projects, policy, education and market-building activities. The Philadelphia Energy Campaign launched in 2016 to drive \$1B in investment in energy efficiency and clean energy, creating 10,000 jobs over 10 years. The Philadelphia Energy Campaign is performing as projected, creating living wage, family sustaining jobs while supporting solutions to Philadelphia's biggest challenges, like public health and climate impacts, poverty, education, housing preservation, and neighborhood stabilization. As of the end of 2023, the Energy Campaign has deployed more than \$900M in projects and more than 7,500 jobs in total. It remains on track to hit its \$1B, 10,000 jobs goal ahead of schedule. PEA supports the City of Philadelphia in meeting its goals of reducing greenhouse gas emissions from the City's built environment by 50% and generating or purchasing 100% of its electricity from renewable sources by 2030. PEA provides long-term contracting, energy-related procurement, project development and management, technical assistance, and workforce development services. In conjunction with the City's Office of Sustainability and other city government partners, PEA helps drive forward energy projects that produce equitable and measurable outcomes. PEA's innovative approach to braiding varied funding streams has allowed it to scale efforts to fight poverty through energy cost reduction, job creation, and helping under-resourced Philadelphians train for work in clean energy jobs. PEA's track record of transformative impact in the region, and the expertise and qualifications of its staff team, makes it the ideal organization to implement CRPG Implementation Grant funding in Southeast PA.

## **Section 7: Budget**

### ***Part A: Budget Detail***

The PEA CPRG Program has a total budget of \$197,822,956, of which \$155M, or nearly 80% of project funds, will deliver benefits to LIDAC census tracts. A detailed breakout of these costs by GHG reduction measure can be found in attachments **Budget\_PEA.pdf** and **Budgetcalcs\_PEA.xlsx**.

### ***Part B: Expenditure of Awarded Funds***

PEA will provide oversight and administrative compliance support for the 37 subrecipients included in this application and ensure awarded funds are accurately spent and tracked thanks to financial controls and established subrecipient agreements that govern the flow of funds and accountability to meet EPA reporting requirements. A detailed written description of PEA's approach, procedures and controls to ensure awarded CPRG funds are expended in a timely and efficient manner can be found in **Budget\_PEA.pdf**.

### ***Part C: Reasonableness of Costs***

PEA is proposing cost-effective and reasonably budgeted projects and programs, demonstrated through the attached **SF-424A** and P.E. review of cost-effectiveness figures detailed in attachment **GHGcalcs\_PEA.xlsx**. A detailed breakout of requested funding and itemized budget with narrative further describing budget elements can be reviewed via attachments **Budget\_PEA.pdf** and **Budgetcalcs\_PEA.xlsx**. The full list of proposed subrecipients and associated sub-awards can also be found in these attachments.