Buildings UP

The Buildings Upgrade Prize

An American-Made Challenges Prize Supported by the U.S. Department of Energy

Phase 3: Pilot Phase

OFFICIAL PRIZE

RULES

November 2024

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Preface

The U.S. Department of Energy (DOE) Buildings Upgrade Prize (Buildings UP) will be governed by 15 U.S.C. §3719 and this Official Rules document. This is not a procurement under the Federal Acquisitions Regulations and will not result in a grant or cooperative agreement under 2 CFR 200. The Prize Administrator reserves the right to modify this Official Rules document if necessary and will publicly post any such notifications as well as notify registered prize participants.

Overview

Buildings UP is a capacity-building prize focused on reducing greenhouse gas emissions in existing buildings through energy efficiency and efficient electrification.

Prize Goals

Buildings UP aims to reward innovative initiatives that address persistent administrative, financial, social, and other barriers to improving building energy efficiency and reducing on-site emissions. Although no single team is likely to address all barriers alone, the portfolio of solutions developed collectively by the winning teams contributes to achieving the prize goals.

Specifically, DOE seeks to support solutions that:

- Accelerate building upgrades for energy efficiency and on-site emissions reductions. Winning concepts will advance significant innovations for rapidly increasing retrofits beyond the current best practices in the applicant's identified area of focus.
- Demonstrate scalability and replicability. Winning concepts will have applicability across building type(s), climate zone(s), and/or community type(s).
- Incorporate innovative applications of existing or new approaches to building upgrades.
- Advance holistic and lasting energy efficiency and efficient electrification initiative development (e.g., through supportive infrastructure, financing, and funding) with support from DOE's and NREL's robust technical support network of American-Made Challenges power connectors.
- Benefit underserved communities. The prize is structured to advance the goal of at least 40% of the initiative benefits accruing to equity-eligible buildings (see the glossary and Section 5.5 for further details), their occupants, and surrounding communities. Winning teams (see the glossary and Section 5.7 for details on eligible team members) in the Equity-Centered Innovation Pathway will receive higher prize amounts, which can support deep and intentional engagement with communities being served.

Prize Structure

In its first two phases, Buildings UP awarded cash prizes and technical assistance (TA) to winning teams that developed innovative concepts and implementable plans for leveraging billions in state, local, and federal funding for energy efficiency and efficient electrification to accelerate building upgrades and achieve greenhouse gas reduction, equity, economic development, and health goals.

Buildings UP has four proposed phases, as shown in Figure 1, over approximately five years. This document addresses the rules for Phase 3 only. Phase 3 is open only to the winners of Phase 2. In Phase 3, DOE intends to award up to $16.8 million total in cash prizes, with awards of up to $200,000 or $400,000 per team, depending on the pathway.

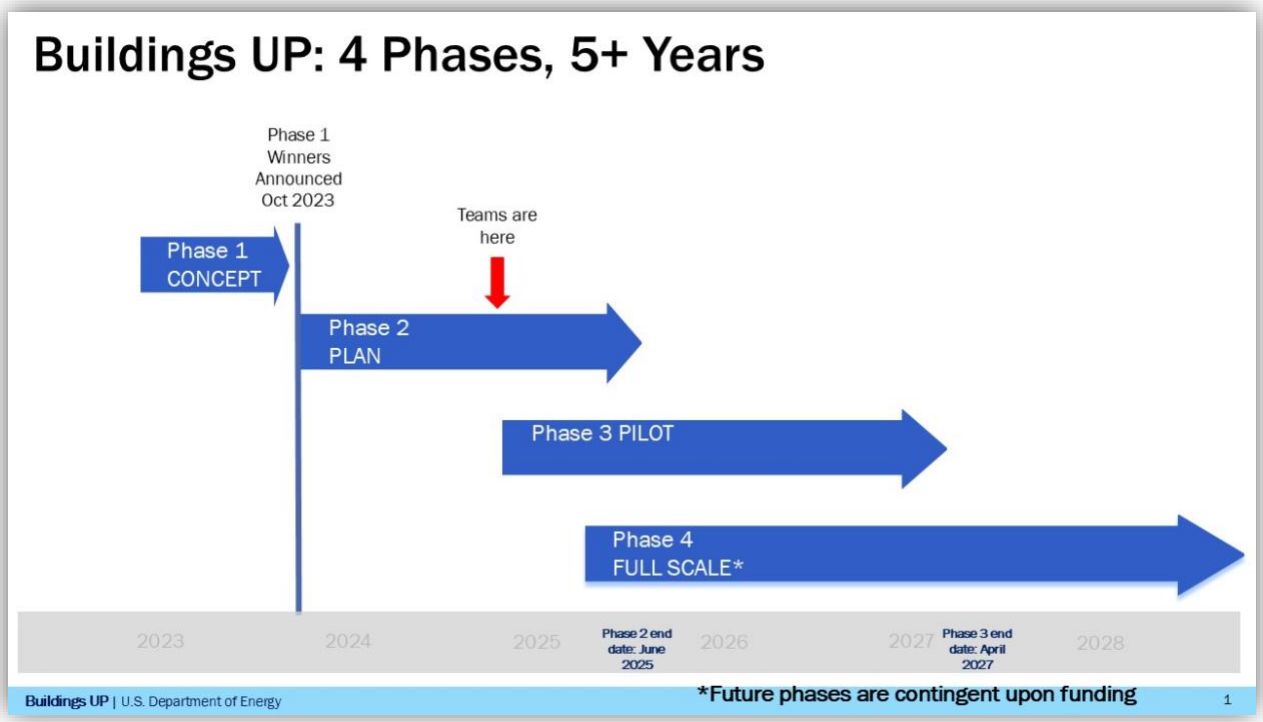


Figure 1. Anticipated Buildings UP Phases

Phase 2 winning teams are competing in one of two pathways:

> ***Equity-Centered Innovation Pathway*** —Teams proposed a new initiative or innovation to an existing initiative for delivering scalable and replicable building upgrades to buildings in disadvantaged communities; low- and moderate-income households; and underserved commercial, nonprofit, and public buildings, which are collectively referred to throughout this document as "equity-eligible" buildings. (See Section 5.6 for a detailed definition.)
>
> ***Open Innovation Pathway***—Teams proposed a new initiative or expansion of an existing initiative that can achieve scalability and replicability of building upgrades.

The two pathways are compared in Table 1. The pathway awarded in Phase 2 must be maintained in Phase 3. Teams are not allowed to change from the Open Innovation Pathway to the Equity-Centered Innovation Pathway (or vice versa) between Phase 2 and Phase 3.

Table 1. Buildings UP Pathways

	Equity-Centered Innovation Pathway	Open Innovation Pathway
Phase 3 Deliverable	Phase 3 submission addressing all minimum requirements and supporting documentation for the team's selected pathway	
Equity Commitment	The team's building upgrade initiative demonstrates a focus on equity-eligible buildings; at least 80% of upgrades take place in equity-eligible buildings. See Section 5.6 for details.	Team is encouraged, but not required, to include equity-eligible buildings in the initiative.
Required Team Members	• The team demonstrates at least 1 full-time equivalent (FTE) staff member supporting the initiative; may be spread across different people and organizations • Designated prize recipient (up to 2 per team) • Community engagement expertise representing communities to be served (e.g., community-based organization)	• The team demonstrates at least 1 FTE supporting the initiative; may be spread across different people and organizations • Designated prize recipient (1 per team)
Encouraged Team Members	Expertise in accessing and/or combining multiple sources of funding to fully resource building upgrade initiatives	• Community engagement expertise • Expertise in accessing and/or combining multiple sources of funding to fully resource building upgrade initiatives
Phase 3 Prize Funding	$400,000	$200,000

All teams must include:

1. A lead organization that commits to providing a lead point of contact (staff person) for the duration of their involvement in Buildings UP. The lead point of contact may change during the prize. The team should have at least one FTE dedicated to this effort. The FTE may be spread across multiple organizations on the team or be one employee at one organization.
2. A Designated Prize Recipient that is a legal entity and can receive prize funds. The Designated Prize Recipient can be a fiscal sponsor for a participating organization that is not a legal entity and can be responsible for further distributing the funds to other organizations on a team. The lead organization may also be the Designated Prize Recipient. More information on payment details is included in Section 5.7.

Additional information can be found in the Buildings UP Frequently Asked Questions (FAQ).

1. Buildings UP Phase 3: Overview

In Phase 3, the Phase 2 winning teams implement their technology demonstration(s), if applicable, and pilot initiatives as described in their Phase 2 submission package. Meeting the minimum requirements will result in a Phase 3 pilot prize award of $200,000 or $400,000 (depending on the pathway) for each team. Teams have the opportunity to earn an Innovation Bonus Prize at the conclusion of Phase 3. The Phase 3 submission addresses: Part 1: Pilot Initiative Building Upgrade Achievements and Building Upgrade Showcase Slide; Part 2: Audit Package; Part 3: Critical Success Factors; Part 4: Innovation Bonus Prize; and Part 5: Resubmission Narrative. All teams must submit parts 1, 2 and 3. Parts 4 and 5 are optional.

Part 1: Pilot Initiative Building Upgrade Achievements and Building Upgrade Showcase Slide. The teams provide all the information requested on each building upgrade achievement completed in Phase 3, as described in Section 2.2. For the Building Upgrade Showcase, the teams highlight a building upgrade project on one slide.

Part 2: Audit Package. For the Audit Package, teams provide additional details on a subset of building upgrades, as described in Section 2.3.

Part 3: Critical Success Factors. Teams summarize how they met each minimum requirement in Phase 3 through a series of narratives and supporting documentation.

Part 4: Innovation Bonus Prize (Optional). Teams may submit for a bonus prize to be awarded at the conclusion of Phase 3 for achieving best practices or developing a novel approach to overcoming persistent challenges associated with building upgrades.

Part 5: Resubmission Narrative (Optional). Teams may upload a narrative describing how they addressed any minimum requirements not met in the initial Phase 3 submission.

1.1. Phase 3 Building Upgrade Achievements

Teams must meet all minimum requirements to win a Phase 3 award. Teams may opt to meet the minimum upgrade requirements by either (1) upgrading the minimum number of buildings/units required in each category or (2) earning the minimum number of points by upgrading fewer buildings/units with more measures. All building upgrades must include the minimum technologies (e.g., heat pump water heater and/or heat pump with weatherization if needed to reduce energy costs) to be eligible to receive points or be counted in the minimum number of pilot upgrades.

To successfully meet the minimum requirements in Phase 3, every upgrade counted toward the Buildings UP minimum number of upgrades or points must include the following building upgrade achievements:

- Minimum technology installed: heat pump and/or heat pump water heater
- National Environmental Policy Act (NEPA) determination secured
- Weatherization and/or health and safety measures included (if needed to enable building upgrades and/or to reduce energy costs)
- Energy cost estimate for proposed upgrade completed
- Consumer disclosure and protection document signed
- Final quality assurance inspection completed (e.g., quality assurance checklist, third- party

inspection, and/or diagnostic software tool)

- **Equity-eligible buildings only:** At least 75% of installed upgrade costs covered by the initiative.

Table A provides guidance on the number of buildings/units that teams must upgrade or the number of points that teams must earn in Phase 3 based on the building types that teams address in their pilot. Teams addressing a single building type in their building upgrade initiative must meet the requirements in Table A for the building type they are addressing. Teams that are replacing central systems can count the number of units or retail units impacted by the central system replacement as separate upgrades. Team-led technology demonstration(s) completed in Phase 3 may be counted toward the pilot initiative upgrade and/or point minimums in the Phase 3 submission if they include the building upgrade achievements listed above.

Table B provides guidance for teams addressing more than one building type in their initiatives. Teams addressing multiple building types in their initiative must meet the upgrade requirements in Table B for the building types they are addressing.

Teams must earn a minimum number of points that are awarded based on specific upgrade measures implemented as part of their pilot initiative, as described in Table C, or complete the minimum number of upgrades shown in Table A and Table B, as applicable to each team's initiative.

Table A. Guidelines on Initiative Upgrade Numbers or Points for Teams Addressing a Single Building Type

Building Upgrade Initiative Stage	Building Types			
	Single-Family Homes	Multifamily Buildings	Small Commercial (<25,000ft^2)	Large Commercial (>25,000ft^2)
Team-led Technology Demonstration (if applicable)[1]	At least 1 home (for each technology and in each climate zone offered)	At least 1 unit (for each technology and in each climate zone offered)	At least 1 separately metered space (e.g., retail or small office space, for each technology and in each climate zone offered)	At least 1 building (for each technology and in each climate zone offered)
Pilot Initiative	At least 10 buildings OR at least 40 points	At least 10 units OR at least 40 points	At least 5 separately metered spaces OR at least 50 points	At least 2 buildings OR at least 60 points
Full-Scale Initiative	At least 100 planned buildings	At least 100 planned units	At least 50 planned separately metered spaces	At least 10 planned buildings

[1] Teams referencing prior technology demonstrations or installations must have approved technology relevance reports for these installations.

Table B. Guidelines on Initiative Upgrade Numbers or Points for Teams Addressing Multiple Building Types

	Single-Family Homes	Multifamily Buildings	Small Commercial (<25,000 ft²)	Large Commercial (>25,000ft²)
Team-Led Technology Demonstration (if applicable)[2]	At least 1 home (for each technology and in each climate zone offered)	At least 1 unit (for each technology and in each climate zone offered)	At least 1 separately metered space (e.g., retail or small office space) (for each technology and in each climate zone offered)	At least 1 building (for each technology and in each climate zone offered)
Pilot Initiative (Teams must upgrade at least one of each building type addressed by the initiative)	At least 10 units or buildings OR at least 40 total points		At least 5 buildings OR at least 40 total points	At least 2 buildings OR at least 40 total points
Full-Scale Initiative	At least 100 planned upgrades to homes, multifamily units, total		At least 25 planned separately metered spaces	At least 5 planned buildings

For example, a team addressing single-family, multifamily, and large commercial buildings (but not small commercial) in their building upgrade initiative should complete technology demonstrations for the minimum technologies offered in a minimum of 1 single-family home, 1 multifamily unit, and 1 large commercial building if a technology relevance report was not submitted in Phase 2 for these building types. In the pilot initiative, the team should complete at least 10 total single-family and multifamily upgrades (including at least one single-family home and one multifamily unit), and at least 2 large commercial buildings during the pilot initiative or earn at least 65 points (25 points in single-family and multifamily upgrades plus 40 points through large commercial building upgrades). Any team-led technology demonstrations completed may count toward the required pilot initiative upgrades and/or points.

Earning Points for Building Upgrade Measures

Building upgrades that include multiple measures are typically more complicated, costly, and can have greater energy, comfort, and other impacts than upgrades that include a single measure. Additionally, some upgrades require health and safety improvements, electrical panel upgrades, or other repairs before efficient electric equipment can be installed and weatherization and envelope improvements can take place. Table C outlines the number of points earned by completing individual measures in an upgrade. Measures must be new to the building, not existing measures.

Note: Table C reflects the National Renewable Energy Laboratory's (NREL's) modeling and analysis of the energy savings potential of building types developed specifically for participants in Buildings UP. It is not

[2] Teams referencing prior technology demonstrations or installations must have submitted technology relevance reports for these installations with the Phase 2 prize submission.

intended to assess energy improvements beyond the context of the improvements associated with Phase 3 of Buildings UP. The following points reflect the focus of the prize to achieve energy, cost, and emissions savings in the building types addressed by initiatives; cost databases were used to inform the cost levels for each measure.

Table C. Upgrade Points by Measure

	Measure	Points
Energy-Related Health and Safety Measures	Roof repair or replacement (>$1,000)	1
	Asbestos abatement (>$1,000)	1
	Lead abatement (>$1,000)	1
	Electrical repair (>$500)	1
	Electric panel upgrade (>$2,000)	1
	Mold and moisture remediation (>$1,000)	1
Residential (Single-Family, Multifamily Units)	Heat pump water heater (not Energy Star® certified)	0.5
	Heat pump water heater (Energy Star certified)	1
	Heat pump water heater (Energy Star Most Efficient 2024)	2
	Ductless heat pump (not Energy Star certified, 1 point per indoor unit)	1
	Ductless heat pump (Energy Star certified, 2 points per indoor unit)	2
	Ducted heat pump heating, ventilating, and air-conditioning (HVAC) system (not Energy Star certified)*	1
	Ducted heat pump HVAC system (Energy Star certified)*	2
	Ducted heat pump HVAC system (Energy Star Most Efficient 2024)*	3
	Cold climate heat pump (not Energy Star certified)*	2
	Cold climate heat pump (Energy Star certified)*	3
	Cold climate heat pump (Energy Star Most Efficient 2024)*	4
	Geothermal heat pump system (not Energy Star certified)*	3
	Geothermal heat pump system (Energy Star certified)*	4
	Geothermal heat pump system (Energy Star Most Efficient 2024)*	5
	Heat recovery ventilation (at least $500)	0.5
	Air sealing (at least $2,000)	1
	Duct sealing (at least $2,000)	1
	Attic floor insulation (at least $2,000)	1
	Finished attic and/or cathedral ceiling insulation (at least $4,000)	2
	Drill and fill wall insulation (at least $2,000)	1
	Interior insulation (at least $2,000, can include insulation for foundation walls, rim joists, and exterior insulation)	1
	LED replacements (at least $500)	0.5
	Low-E storm windows (at least $1,000)	1
	Window dressers (at least $500)	0.5
	New double-pane windows (at least $4,000, Energy Star certified)	2
	Electric induction stove (Energy Star certified)	1
	Heat pump dryer (Energy Star certified)	1
	Electric vehicle charger (Energy Star certified)	1
	Solar panels (at least $4,000)	2
	Battery (Energy Star certified, 10 kWh or greater)	1
	Equipment fuel conversion for heat pump or heat pump water heater	2

Small Commercial (<25,000ft²)	Ductless heat pump (not Energy Star certified, 6 points per heat pump, up to 2 heat pump systems)	6
	Ductless heat pump (Energy Star certified, 7 points per heat pump, up to 2 heat pump systems)	7
	Ductless heat pump (Energy Star Most Efficient 2024, 8 points per heat pump, up to 2 heat pump systems)	8
	Ducted heat pump HVAC system (not Energy Star certified)*	11
	Ducted heat pump HVAC system (Energy Star certified)*	13
	Ducted heat pump HVAC system (Energy Star Most Efficient 2024)*	15
	Ducted geothermal heat pump (not Energy Star certified)*	13
	Ducted geothermal heat pump (Energy Star certified)*	15
	Ducted geothermal heat pump (Energy Star Most Efficient 2024)*	17
	Heat pump boiler (Air-to-water heat pump for boiler replacement; Energy Star certified)	10
	Heat pump hot water heater (not Energy Star certified, less than 45 gallons storage volume)	1
	Heat pump hot water heater (Energy Star certified, less than 45 gallons storage volume)	2
	Heat pump hot water heater (Energy Star Most Efficient 2024, less than 45 gallons storage volume)	3
	Heat pump hot water heater (not Energy Star certified, greater than 45 gallons storage volume)	5
	Heat pump hot water heater (Energy Star certified, greater than 45 gallons storage volume)	6
	Heat pump hot water heater (Energy Star Most Efficient, greater than 45 gallons storage volume)	7
	Energy or heat recovery system (at least $12,000)	8
	Exterior wall insulation (at least $10,000)	5
	Roof insulation (at least $10,000)	6
	Air sealing (at least $10,000)	7
	Duct sealing (at least $10,000)	5
	Secondary window system (at least $4,000)	2
	Window film (at least $2,000)	1
	Window replacements (Energy Star certified, at least $10,000)	5
	LED lighting (at least $6,000)	3
	Variable refrigerant flow system with dedicated outdoor air system (must meet DOE's appliance and equipment standards	10
	Demand control ventilation (at least $4,000)	2
	Battery (>15 kW)	8
	Solar panels (at least $20,000)	10
	Equipment fuel conversion for heat pump or heat pump water heater	10
Large Commercial (>25,000 ft²)	Ductless heat pump (must serve 30% of conditioned space, not Energy Star certified, 5 points per heat pump, up to 2 heat pump systems)	7
	Ductless heat pump (must serve 30% of conditioned space, Energy Star certified, 7 points per heat pump, up to 2 heat pump systems)	8
	Ductless heat pump (must serve 30% of conditioned space, Energy Star Most Efficient 2024, 7 points per heat pump, up to 2 heat pump systems)	9

	Ducted heat pump HVAC system (not Energy Star certified)*	13
	Ducted heat pump HVAC system (Energy Star certified)*	15
	Ducted heat pump HVAC system (Energy Star Most Efficient 2024)*	17
	Ducted geothermal heat pump (not Energy Star certified)*	15
	Ducted geothermal heat pump (Energy Star certified)*	17
	Ducted geothermal heat pump (Energy Star Most Efficient 2024)*	19
	Heat pump hot water heater (not Energy Star certified, less than 45 gallons storage volume)	1
	Heat pump hot water heater (Energy Star certified, less than 45 gallons storage volume)	2
	Heat pump hot water heater (Energy Star Most Efficient 2024, less than 45 gallons storage volume)	3
	Heat pump hot water heater (not Energy Star certified, greater than 45 gallons storage volume)	5
	Heat pump hot water heater (Energy Star certified, greater than 45 gallons storage volume)	6
	Heat pump hot water heater (Energy Star Most Efficient, greater than 45 gallons storage volume)	7
	Energy or heat recovery system (at least $14,000)	10
	Exterior wall insulation (at least $12,000)	8
	Roof insulation (at least $12,000)	8
	Air sealing (at least $12,000)	10
	Duct sealing (at least $10,000)	6
	Secondary window system (at least $4,000)	2
	Window film (at least $2,000)	1
	Window replacements (at least $14,000)	7
	Energy recovery (at least $25,000)	12
	LED lighting (at least $10,000)	5
	Variable refrigerant flow system with dedicated outdoor air system (must meet DOE's appliance and equipment standards)	13
	Demand control ventilation (at least $4,000)	2
	Battery (>15 kW)	8
	Solar panels (at least $25,000)	13
	Equipment fuel conversion for heat pump or heat pump water heater	10
*** Only one ducted HVAC heat pump system can count for a commercial building or residential dwelling. Ductless heat pump systems can be counted multiple times, as specified in the table.**		

Calculating Building Upgrade Points

The teams tally the points earned in each building upgrade they perform. For example, a team installing an Energy Star-certified ducted heat pump, air sealing, and attic insulation in an equity-eligible single-family home that was previously using fuel oil would earn 7 points, as shown in Table D.

Table D. Point Calculation for Example Residential Single-Family Building Upgrade

Example Upgrade	
Ducted heat pump HVAC system (Energy Star certified)*	2
Attic floor insulation (at least $2,000)	1
Air sealing (at least $2,000)	1
Equipment fuel conversion for heat pump or heat pump water heater	2
Total points	**6**

For a team addressing only single-family homes, at least 10 upgrades OR 40 points must be achieved during the pilot phase. All upgrades must include the minimum technologies (heat pump water heater and/or heat pump with weatherization if needed to reduce energy bills). A team could repeat this example upgrade with the minimum technologies in 7 homes to achieve 42 points to meet and exceed the pilot requirements.

1.2. National Environmental Policy Act Determinations

NEPA was signed into law on January 1, 1970. NEPA requires federal agencies to assess the environmental effects of their proposed actions, or proposed actions they have enabled through federal funding, prior to making decisions. All building upgrades completed toward achievement in Phase 3 of Buildings UP must obtain a NEPA determination before installation work begins on a particular upgrade. DOE will only evaluate technology demonstrations, installations, and upgrades that have received a NEPA determination.

Teams must secure a NEPA determination for all upgrades reported as part of the Phase 3 submission. A NEPA determination must be secured before upgrade work begins. NEPA determinations are made by the DOE Office of NEPA Policy and Compliance, not by the Buildings UP Prize Administrators, and must be secured prior to Phase 3 submissions. To be eligible for a Phase 3 award, teams must include their NEPA determination numbers with their Phase 3 submissions to confirm that this process has been completed for every upgrade that took place. Teams may secure a blanket NEPA determination for groups of buildings in the same location that have the same usage type and similar construction dates.

This prize has two categories of upgrades: Standard and Non-Standard. Table E describes upgrades in each category and the documentation that must be submitted to process a NEPA determination. Measures listed under Buildings UP Standard Upgrade may qualify for an expedited NEPA review. Those with proposals that do not fit within the listed parameters for an expedited review are nonstandard and will likely require individual NEPA review. If the proposed activities are not identified within these lists, and if they do not meet all conditions of applicability, the team must complete an individual NEPA review. An individual NEPA review requires the submission of an Environmental Questionnaire 1 (EQ1) form (https://www.eere-pmc.energy.gov/NEPA.aspx). Refer to the Buildings UP NEPA Guide on the Buildings UP Community Site for step-by-step instructions to submit the form: https://buildings-up.mobilize.io/main/groups/74820/lounge/resources?path=%2FPeer%20Resources%20(not%20reviewed%20by%20Buildings%20UP.

Table E. NEPA Buildings UP Upgrade Types

Buildings UP Standard Upgrade
Activities 1 through 7 would qualify for the Standard Upgrade Phase 3 NEPA determination: 1. Administrative activities 2. Energy audits 3. Development and implementation of programs, plans, and strategies to encourage energy efficiency and renewable energy, such as policy development and stakeholder engagement 4. Development and implementation of classroom or online training programs 5. Development and implementation of building codes, including inspection services, and associated activities to support code compliance and promote building energy efficiency 6. New installation of non-hardwired devices, including photo controls, occupancy sensors, carbon dioxide, thermostats, humidity, light meters, and other building control sensors, provided the work conforms with applicable state and local permitting requirements 7. Installation of electric vehicle supply equipment (EVSE), including testing measures to assess the safety and functionality of the EVSE, restricted to existing footprints and levels of previous ground disturbance, within an existing parking facility, defined as any building, structure, land, right-of-way, facility, or area used for parking motor vehicles. All activities must use reversible, nonpermanent techniques for installation, where appropriate; use the lowest profile EVSE reasonably available that provides the necessary charging capacity; place the EVSE in a minimally visibly intrusive area; use colors that are complementary to the surrounding environment, where possible; and are limited to the current electrical capacity. This applies to Level 1, Level 2, or Level 3 (also known as Direct Current (DC) Fast Charging) EVSE. (Not applicable to Tribal lands.) **Activities 8 through 24 would qualify for the Standard Upgrade Phase 3 NEPA determination provided that the work does not affect character-defining features of the building and would not require structural reinforcement:** 8. Replacement of existing lighting with energy-efficient lighting, provided such work does not affect character-defining features of the building 9. Installation of building insulation (not including spray insulation) 10. Installation of insulation on ducts, water heater tanks, and heating pipes 11. Duct sealing, insulation, repair, or replacement in unoccupied areas 12. External weather sealing of the building shell, including caulking, weather stripping, and other air infiltration control measures on windows and doors, and installing thresholds in a manner that does not harm or obscure historic windows, trim, or character-defining features of the building 13. Interior weather sealing, including using weather stripping, door sweeps, and caulk, and sealing major air leaks associated with bypasses, ducts, air-conditioning units, etc. 14. Purchase and installation of energy-efficient or energy/water-efficient home and commercial

appliances and equipment (including, but not limited to, energy- or water-monitoring and control systems, thermostats, furnaces, and air conditioners)

15. Retrofit of energy-efficient pumps and motors
16. Plumbing work, including installation and replacement of water heaters
17. Furnace or hot water tank replacement that does not require a visible new supply or venting
18. Replacement and upgrades of existing HVAC equipment, including pumps, motors, boilers, chillers, cooling towers, air handling units, package units, condensers, compressors, or heat exchangers that do not require a new location and are not visible from any public right-of-way, provided such work does not affect character-defining features of the building
19. Clean, tune, repair, or replace heating systems, including furnaces, boilers, heat pumps, vented space heaters, and woodstoves
20. Clean, tune repair, or replace cooling systems, including central air conditioners, window air conditioners, heat pumps, and evaporative coolers
21. Conduct other efficiency improvements on heating and cooling systems, including replacing standing pilot lights with electronic ignition devices and installing vent dampers
22. Modifying duct and pipe systems so heating and cooling systems operate efficiently and effectively, including adding return ducts, replacing diffusers and registers, replacing air filters, and installing thermostatic radiator controls on steam and hot water heating systems
23. Installation of programmable thermostats, outdoor reset controls, UL-listed energy management systems or building automation systems, and other HVAC control systems
24. Adding or replacing existing building control systems, including HVAC control systems and replacing building-wide pneumatic controls, with digital controls, thermostats, dampers, and other individual sensors, such as smoke detectors and carbon monoxide detectors (wired or non-wired).

Activities 25 through 33 would qualify for the Standard Upgrade Phase 3 NEPA determination provided the following conditions are met:

- Activities would not be located on Tribal lands or within Tribal properties.
- Activities would not be installed in a historic or potentially historic building (any building 45 years or older).
- Activities would not occur within a historic district.
- Activities would not require structural reinforcement.
- Activities would not require trees to be trimmed or removed.
- Any ground-disturbing activities would be confined to the boundaries of an existing facility (defined as an already disturbed area due to regular ground maintenance) and are limited to:

25. Retrofit and replacement of windows and doors
26. Installation of battery energy storage systems (not to exceed 1,000-kWh capacity)
27. Installation of waste heat recovery devices, including desuperheater water heaters, condensing heat exchangers, heat pumps and water heating heat recovery systems, and other energy recovery

equipment

28. Installation of Combined Heat and Power Systems (systems sized appropriately for the buildings in which they are located, not to exceed peak electrical production at 300 kW)
29. Installation of solar electricity/photovoltaic systems (not to exceed 60 kW)
30. Installation of a wind turbine (20 kW or smaller)
31. Installation of solar thermal systems (including solar thermal hot water). (Systems must be 200,000 BTU per hour or smaller)
32. Installation of ground source heat pumps (5.5 tons of capacity or smaller, horizontal/vertical, ground, closed-loop systems)
33. Installation of biomass thermal systems (3 MMBTUs per hour or smaller systems with appropriate Best Available Control Technologies installed and operated, and required permits obtained).

Buildings UP Standard Upgrade

Teams working with standard NEPA upgrades should submit a completed Buildings UP Standard NEPA Upgrade Worksheet to DOE through their Regional Navigator. The worksheet is available on the Buildings UP Community Site at https://app.box.com/s/l1hlifxagn5tuim5uonsjggxohu7vr39. Teams may submit multiple building upgrades on a single worksheet. Once reviewed, DOE will evaluate and if approved send an approval email to the team with the NEPA determination number for the portfolio of upgrades included on the worksheet.

Buildings UP Non-Standard NEPA Upgrade

All other upgrades are nonstandard. Submit these upgrades on an EQ1 Form to DOE on the Project Management Center website at https://www.eere-pmc.energy.gov/NEPA.aspx#. Upgrades proposed in buildings that may be eligible for the National Register of Historic Places under the National Historic Preservation Act of 1966 will require additional evaluation, which may add 60 days (or more) to the review period. Teams will receive a NEPA determination number once approved.

Buildings UP Geographic Area NEPA Review ("Blanket" NEPA Review)

Teams may request a NEPA review of planned upgrades to multiple buildings within a common geographic area for which similar upgrade measures are planned. To be eligible for a NEPA determination that covers many locations in a common geographic area, buildings must be of similar type (e.g. all are single-family row homes, all are manufactured homes) and vintage (e.g., all were built in the same year, or close to the same year) with similar upgrade measures planned. Teams do not need to wait on signed contracts or confirmed subscribers to submit a request for NEPA review. Obtaining a NEPA determination proactively allows teams to perform upgrades within a covered location without delay once a subscriber is confirmed or a contract for an upgrade is signed. Visit the DOE NEPA website to submit documentation to start the review process: https://www.eere-pmc.energy.gov/nepa.aspx

After teams submit their Standard NEPA Upgrade Worksheet and/or EQ1 Form, DOE will coordinate with the teams directly to facilitate NEPA determinations. Teams should not begin work on an upgrade until they receive a NEPA determination for the location. ALL UPGRADES REQUIRE A NEPA DETERMINATON BEFORE WORK BEGINS. More information on NEPA compliance is in Appendix 4.2.

1.3. Resources To Support Teams

As part of their prize under Phase 1 and Phase 2, winning teams were awarded 100 or 140 hours of technical Assistance (TA) per phase, depending on the pathway. Teams competing in Phase 3 continue to have access to the Buildings UP Community Site and TA from a variety of providers. Teams will continue to receive support from Regional Navigators and Technical Assistance Providers (TAPs) to utilize TA hours awarded in Phase 1 and Phase 2 and receive group TA. Individual team TA may be available in Phase 3 on a first-come, first-served basis after a team has used all its awarded Phase 1 and Phase 2 TA hours. TAPs offer teams support in the areas of identifying funding and financing for building upgrades, building stock and energy modeling analysis, programmatic design, workforce development and economic inclusion strategies, achieving equitable outcomes, and other relevant areas. Regional Navigators and TAPs cannot serve as a team member or team partner. TAPs and regional navigators are not permitted to provide direct application support (e.g., a TAP or Regional Navigator must not draft any portion of a team's submission package). Such participation by a TAP or a Regional Navigator will result in disqualification of the team.

1.4. Phase 3 Submission Timeline

There will be opportunities twice per year for teams to submit their Phase 3 submission packages. This submission schedule allows Buildings UP teams to progress through Phase 3 at a pace that best suits the needs of their initiative. Teams have two chances to pass Phase 3 and may resubmit items one time during Phase 3 (i.e., a resubmission package) to address any deficiencies if the initial submission did not pass. Resubmissions must be received by the close of the final submission period of Phase 3. Bonus Prize evaluation will take place at the end of Phase 3.

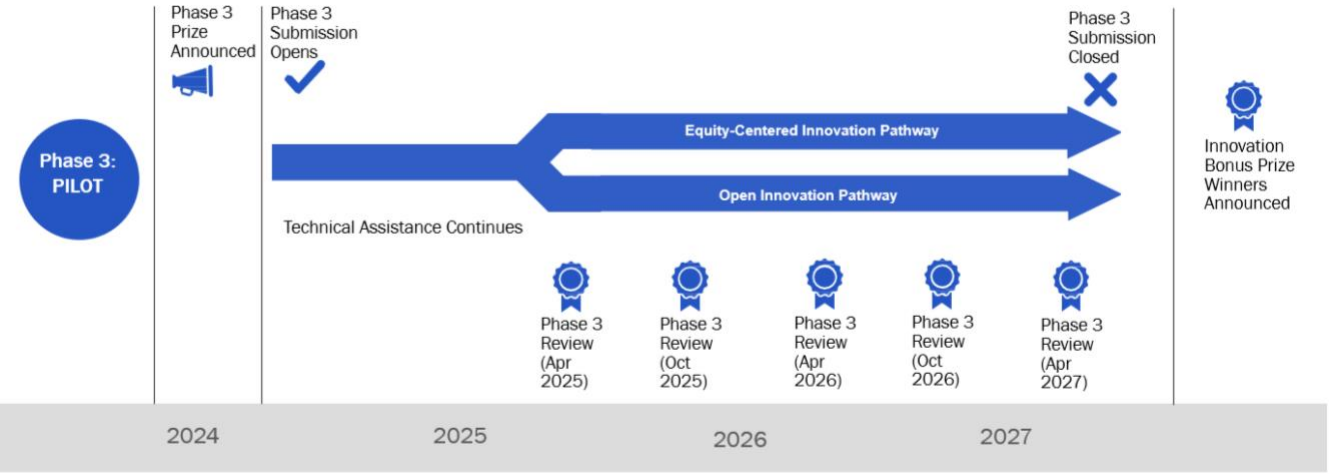


Figure 2. Phase 3 timeline

1.5. Submissions Not of Interest

Applications that do not provide evidence of completed technology demonstration(s) (or accepted Technology Relevance Report from Phase 2) with existing technology demonstration report/prior installations are not of interest. Applications without the minimum number or upgrades and/or points outlined are not of interest. Submission materials for building upgrades for which a required NEPA determination is not provided, or which do not include the minimum technologies, will not be considered.

1.6. Requesting an Exemption

If a team believes a minimum requirement specified in the rules is not applicable to a team's building upgrade initiative, the team may submit a request for an exemption to DOE for consideration.

DOE expects such instances to be rare but may consider exemptions where sufficiently justified. DOE will not consider budget constraints as a valid reason for not meeting a minimum requirement. Exemption from the minimum requirement for critical success factor 3a (See Section 2.4) for installation of minimum technologies is not available.

Teams are required to confirm exemptions with the Prize team in advance of submitting a Phase 3 submission. DOE will not conduct exemption reviews as part of a submission package or within 30 days prior to the close of each submission period. To submit an exemption request, teams may send an email to buildingsUP@nrel.gov with the subject line: "[TEAM NAME] – Exemption Request" and provide a rationale for the exemption in the body of the email. For exemption requests submitted prior to the submission of an application, DOE will strive to respond to requests within 10 business days.

1.7. Prizes to Win

Teams that complete technology demonstration(s) (if applicable), and a pilot initiative that meets the minimum requirements of the prize will receive $200,000 or $400,000, depending on the pathway (Open Innovation Pathway or Equity-Centered Innovation Pathway, respectively). Teams may win up to $80,000 in the Innovation Bonus Prize. TA will also be available to the Phase 3 prize winners, but individual team TA hours are not awarded under Phase 3.

1.8. Key Dates

- October 2024: Phase 3 announcement and rules are posted.
- April 2025–April 2027: Phase 3 pilot prize submission period: Submissions will be collected and reviewed every 6 months on April 28, 2025; October 27, 2025; April 16, 2026; October 26, 2026; and April 27, 2027, at 5 p.m. Eastern Time. Teams may submit up to two times during the submission period. Submissions must be received no later than April 27, 2027, at 5 p.m. Eastern Time to be considered for a Phase 3 award.
- June 2025–June 2027: The Phase 3 pilot prize winning teams are announced, and prizes are awarded. Prizes are paid approximately 30 to 60 days after the DOE audit verifies that the information and all payment documentation is received from the winning teams.
- Innovation Bonus Prize submissions will be reviewed at end of Phase 3 (April 27, 2027).

2. Phase 3 Submission Package and Evaluation Overview

Phase 3 submission package items are listed in Table 4. All items listed are mandatory unless specifically labeled as optional. Teams may submit two times during the Phase 3 submission period. A second submission can be submitted at any time with information addressing the deficient portions of the first submission.

Table 4. Overview of Phase 3 Submission Package

Information Supplied	Is this a Mandatory Submission Item?	Will This Be Made Public?	Scored Item
Eligibility Information	Yes	No	No
Team and General Information	Yes	Partial	No
Part 1. Pilot Building Upgrade Achievements Table, Cut Sheets, and Building Upgrade Showcase Slide	Yes	Partial	Yes
Part 2. Audit Package	Yes	Partial	No
Part 3. Critical Success Factors	Yes	Partial	Yes
Part 4. Innovation Bonus Prize (Optional)	No	Partial	Yes
Part 5: Resubmission Narrative (Optional)	No	No	Yes

DOE may publicly highlight team successes and publish the lessons learned and best practices from this initiative. Teams that do not want their submission elements or other documents to be made public will need to mark them according to the instructions in the appendix (Section 6.8.).

Evaluation criteria are included in Sections 2.2 through 2.5 along with what must be submitted in each part to determine whether the teams meet the minimum requirements and/or the best practices in each area.

2.1. Team and General Information

Team information, general questions, and the Phase 3 submission package are described in this section. Each part of the submission package includes narratives and/or supporting documentation that are reviewed to determine if teams meet the minimum requirements. Please follow the page limits, file types, and formatting guidelines for all uploaded documents. Please adhere to the page limits specified for each uploaded item using 11-point Calibri (or similar) font for text and tables, with 1" page margins. Narrative character limits are based on using 11-point Calibri font with 1" margins. All items are mandatory unless otherwise noted as optional or applicable only to specific situations.

To assist teams, DOE is providing elective templates to illustrate the types of information needed to evaluate whether teams meet the minimum requirements. Teams are not required to use these templates, but submissions should address the substantive items in the templates shown in Appendix 4.1 of this Official Rules document.

Team and General Information

List basic information about your team. Responses to questions with an asterisk (*) may be made public.

1. Team name*
2. Team image (optional)*
3. Team location(s)* (city/ies) and/or state(s) where the full-scale building upgrade initiative is anticipated to take place)
4. Lead organization name*

5. Team member organizations* (as known at the time of submission); include organization name, website (optional), and point of contact name, email, and phone number for each team member organization.

6. Designated Prize Recipient(s) (legal entity that can receive prize funds; may be different from the lead organization and may be a fiscal sponsor): up to two prize recipients may be identified for Equity-Centered Innovation Pathway teams and one Prize Recipient may be specified for Open Innovation Pathway teams.

7. Prize pathway* (Equity-Centered Innovation Pathway or Open Innovation Pathway)

8. The team confirms they completed a technology demonstration in Phase 3-__Yes __No. (If yes, teams must submit a Technology Demonstration Report – Critical Success Factor 3)

9. The team confirms they added new or additional heat pump or heat pump water heater offerings, added or changed building types, or climate zones in Phase 3: __Yes __No. (If yes, teams must submit technology relevance reports or technology demonstration reports under Critical Success Factor 3 or submit approval documentation from DOE.)

10. The team confirms they have all required Audit Package documentation for every upgrade completed and reported in Phase 3 available for DOE upon request: __Yes __No. (See Section 2.3 for required documentation.)

2.2. Part 1: Pilot Building Upgrade Achievements (Mandatory)

The teams must show that they have completed the required number of pilot building upgrades or earned the required number of points and met the minimum requirements as described below by uploading the requested documentation on HeroX and providing the Audit Package materials upon request by DOE. Templates are provided for the administrative convenience of the teams. Teams are not required to use the templates, but they must include all the information outlined in the template in the Appendix.

Teams may complete the narrative and must upload all the required supporting documentation.

Narrative: Minimum requirements and best practices: (*Optional) Limit 5,000 characters with spaces (approximately 2 pages).* Summarize how your team met each minimum requirement in the following table on building upgrade achievements. Building upgrade achievements will be verified when the Audit Package information is received.

Uploaded documentation:

- **Building upgrade showcase slide.** *Required.* Limit one slide. Prepare a slide showcasing one pilot initiative building upgrade. Teams should include team name and number, initiative name, a summary of the measures completed, a photo with caption, the upgrade location, the date the project was completed, the building type, the technology, and the climate zone where the upgrade took place. Include outcomes or impacts, if known at the time of submission (e.g., estimated or actual cost savings, added benefits such as cooling, improved energy efficiency, and if switching to electricity from another fuel type, as applicable). Templates are provided for the administrative convenience of the teams. The teams are not required to use the templates, but they must include all the information outlined in the template in Section 4.1.3 in the Appendix.
- **Phase 3 pilot initiative tracking workbook.** *Required. Upload an Excel file with up to 5 worksheets. Include a separate worksheet for each of the following areas: Building Upgrade*

Tracker, Administrative Budget and Staffing Table, Technology Suitability Table, Workforce Training Tracker, and Equity-Eligible Buildings (if applicable). Please include all substantive information shown in the templates provided in the Appendix if you chose not to use the DOE-provided templates.

DOE will provide the following submission templates:

- Phase 3 pilot initiative tracking workbook
- Building upgrade showcase slide.

Templates are provided for the administrative convenience of the teams. Teams are not required to use the templates, but they must include all the information outlined in the template in the Appendix.

Building Upgrade Achievements Minimum Requirements

Minimum Requirements
Both pathways: a. Team installed a heat pump and/or heat pump water heater in every building upgrade counted toward the minimum number or upgrades or points. b. Team has completed the minimum number of pilot initiative building upgrades or achieved the minimum number of points in each building type included in the pilot building upgrade initiative as described in tables A, B, and C. c. Team obtained a NEPA determination number for every upgrade completed. d. Team ensured that energy cost estimates were completed prior to beginning the upgrades for every upgrade completed. e. Weatherization/energy efficiency and/or health and safety measures were included, if needed, to enable building upgrades and/or to keep the utility bill impacts low. f. Signed Consumer Disclosure Form, **signed by the entity paying the energy bills AND occupants (if different)** acknowledging: (1) the work to be conducted, (2) the costs and savings associated with the upgrade(s), (3) the required access to conduct the work, (4) the process for identifying and addressing energy-related health and safety measures (where applicable), (5) any warranties, (6) the process for filing and addressing complaints, and (7) including an acknowledgment of increased energy costs due to additional service provided, if applicable (e.g., air conditioning from a heat pump). g. The team completed a final quality inspection for every upgrade completed (e.g., Quality Assurance checklist, third-party inspection, and/or diagnostic software tool).

2.3. Part 2: Audit Package (Mandatory)

Following the team's initial submission of the Phase 3 submission package, DOE will select 10%–20% of the minimum required number of building/unit upgrades listed in the Pilot Building Upgrade Achievements table above, or a minimum of one building/unit per building type addressed by the initiative, for the Pilot Upgrade Audit Package. DOE will use the Pilot Upgrade Audit Package to spot-check compliance with the submission requirements.

ALL TEAMS MUST HAVE THE FOLLOWING DOCUMENTATION FOR EVERY UPGRADE COMPLETED:

a. **Unique building/unit upgrade identifying number** that matches the team's Pilot Initiative Upgrades Table

b. **NEPA determination** covering the measures and attributes noted in the team's Pilot Initiative Upgrades Table for the upgrade

c. **Energy cost estimate** showing the pre-upgrade energy costs and expected post-upgrade energy costs

d. **Signed Consumer Disclosure Form**, signed by the entity paying the energy bills AND occupants (if different) acknowledging (1) the work to be conducted, (2) the costs and savings associated with the upgrade(s), (3) the required access to conduct the work, (4) the process for identifying and addressing energy-related health and safety measures (where applicable), (5) any warranties, (6) the process for filing and addressing complaints, and (7) including an acknowledgment of increased energy costs due to additional services provided, if applicable (e.g., air conditioning from a heat pump)

e. **Scope of work** proposed showing the recommended measures, prerequisite health and safety measures (if applicable), and weatherization needed to reduce energy bills (if applicable). Redact all personally identifiable information.

f. **Copy of final invoice(s)** matching the measures installed. Redact all personally identifiable information

g. **Copy of final quality inspection documentation** matching the location of the upgrades selected for audit

h. **Proof of equity-eligible building status**, if claimed (e.g., map showing the location in the J40 census tract, on Tribal land, etc.)

i. **Photos** of completed work (optional).

Prize Administrators will email the teams that meet all Phase 3 requirements 5 to 10 business days after the applicable submission period closes to identify which upgrades the teams must include in the Audit Package. The teams must provide the Audit Packages within 10 business days from receipt of email to buildingsUP@nrel.gov. Awards will be issued once the information is confirmed through the audit process.

2.4. Part 3: Critical Success Factors (Mandatory)

Teams must describe how they met the minimum requirements and/or the best practices in each of the 10 critical success factors and upload supporting documentation as required under each critical success factor. Note that all minimum requirements must be addressed, as applicable to the pathway. Best practices are optional. If an exemption to a minimum requirement was granted, please indicate this and include a copy of the exemption approval language in the narrative.

2.4.1. Critical Success Factor 1: Pilot Initiative Team

Narrative: minimum requirements and best practices: *Required*. *Limit 5,000 characters with spaces (approximately 2 pages).* Summarize how your team met each minimum requirement and/or the best practices in Critical Success Factor 1. (Best practices are optional.) Clearly delineate the best practices, if applicable, from the minimum requirements.

Uploaded documentation:

- **Affirmations of team involvement**. *Required. Combine into one PDF.* Include a letter affirming the team member involvement from <u>each</u> team member organization.

DOE will provide the following submission template:

- Pilot Initiative Tracking Workbook: Administrative Budget and Staffing Table worksheet.

Templates are provided for the administrative convenience of the teams. The teams are not required to use the templates, but they must include all the information outlined in the template in Appendix 4.1.

Minimum Requirements
Both pathways: a. Team provided the affirmations of team involvement from the team members verifying their role and involvement in the initiative. b. Team has at least one FTE staff member dedicated to the initiative (can be funded by multiple organizations through any means).
Equity-Centered Innovation Pathway only: c. Team includes a community-based organization (CBO)[3] or entity representing the community being served that has a lead role in, or significantly contributes to, decision-making in multiple critical success factors and is consulted on decision-making for all critical success factors.
Best Practices
Both pathways: a. Team included one or more CBOs or entities representing the community being served that have a lead role in decision-making in most or all critical success factors. b. Team had a financing expert or organization on the team or is partnered with one to finance/fund upgrades during the pilot initiative. c. Team included member(s) with experience completing building upgrade technology field validations and/or pilot projects.

2.4.2. Critical Success Factor 2: Community Engagement, Stakeholder Engagement, and Community Benefits

Teams must complete the narrative.

Narrative: minimum requirements and best practices: Required. *Limit 10,000 characters with spaces (approximately 4 pages).* Summarize how your team met each minimum requirement and/or the best practices in Critical Success Factor 2. (Best practices are optional.) Clearly delineate the best practices, if applicable, from the minimum requirements.

[3] See the glossary of terms for this definition and others.

Minimum Requirements
Both pathways: a. Team continued to meaningfully engage with building owners, occupants, and community and other stakeholders, as applicable, during the pilot and showed how they responded to feedback.[4] The team provided quantitative and quantitative information demonstrating this minimum requirement. b. Team described the challenges and lessons learned from the community and stakeholder engagement efforts or stated that no challenges or lessons learned occurred in Phase 3. c. Team described at least one additional benefit beyond the building upgrade itself that was delivered to the community through their pilot initiative (e.g., training local workforce, increased housing stability). d. Team provided a link to a publicly available Community Accountability Plan or explained how it was made available to the public in the narrative. e. Team indicated how they implemented the Community Accountability Plan and remained accountable to the community during Phase 3.
Equity-Centered Innovation Pathway only: *f.* A CBO or entity representing the community(ies) was involved in carrying out the community engagement activities.
Best Practices (Optional)
Both pathways: a. The initiative delivered more than one additional benefit (beyond upgrade and expected energy cost reduction) for the impacted communities (e.g., training local workforce, increased housing stability). b. Team demonstrated partnership with community leaders and/or organizations to design the engagement process, to reach wide networks, and to create positive engagement experiences for disadvantaged community members. c. The team provided food, transportation, language interpretation, childcare, or other wrap-around services in addition to compensation for the expertise and time shared by community members, or other means to create accessible and welcoming engagement opportunities.

2.4.3. Critical Success Factor 3: Technology Suitability

Teams conducting technology demonstrations or adding/changing technology offerings, building types, and/or climate zones in Phase 3 must demonstrate that the technology will perform as expected.

Teams must complete a team-led technology demonstration or reference three prior installations or one prior technology demonstration for each minimum technology, building type, and climate zone included in the pilot initiative.

DOE will evaluate the following questions to determine whether the technology demonstration and/or installations are relevant to the planned pilot initiative:

1. Is the team testing building upgrade scenarios in the same building type with similar usage

[4] Meaningful engagement is inclusive, inviting, and tailored for the audience, with consideration of communities that have been historically marginalized from decision-making or have experienced disproportionately high burdens and low benefits from previous policies and initiatives. Further information is available in the glossary of terms.

patterns and weather/climate zone/seasonal conditions as the planned pilot initiative?

2. Is the team comparing similar equipment, with similar outputs and efficiency levels, in similar design and installation conditions?

3. Do the extrapolated financial estimates and occupant experiences from prior installations and/or technology demonstrations indicate that the pilot upgrades can be anticipated to save the pilot initiative subscribers money on energy bills or provide an added benefit, such as cooling and improved comfort, to occupants?

Early Sufficiency Determination for a Technology Relevance Report

Teams using a Technology Relevance Report to demonstrate technology suitability for the climate zone and building type may seek a determination of the sufficiency of the report from the prize team prior to submitting a full Phase 3 submission package by emailing buildingsUP@nrel.gov with the subject line: "TEAM NAME - Review Request - Technology Relevance Report." DOE will review only complete reports with all information from the Technology Relevance Report. DOE anticipates providing determinations within 15 business days of receipt of request. Teams will receive a determination from DOE via email and will upload the determination email under Part 3: Critical Success Factor 3.

Teams must complete the narrative and upload all applicable supporting documentation.

Narrative: minimum requirements and best practices: Required. *Limit 7,500 characters with spaces (approximately 3 pages).* Summarize how your team met each minimum requirement and/or the best practices in Critical Success Factor 3. (Best practices are optional.) Clearly delineate the best practices, if applicable, from minimum the requirements.

Uploaded documentation:

- **Technology relevance report approval documentation.** *Required. Upload any approval emails received from DOE in Phase 2 and/or Phase 3. Combine into one PDF.*

Teams adding or changing pilot initiative offerings or completing a technology demonstration in Phase 3 must provide the following documentation.

Uploaded documentation:

- **Team-led technology demonstration summary report(s):** As applicable for teams that led a technology demonstration in Phase 3. *Combine into one PDF.*

- **Technology demonstration report(s):** As applicable for teams that led a technology demonstration or referenced a prior technology demonstration in Phase 3. *Combine into one PDF.* Upload the report received from the entity that completed the technology demonstration. *No page limit.*

- **Cut sheets or technical specs:** For each technology included in the team-led technology demonstrations or referenced in prior technology demonstrations in Phase 3. *Optional. No page limit. Please combine all specs and cut sheets into one uploaded file.*

- **Technology relevance report(s):** As applicable for teams referring to existing technology demonstrations or referencing three prior relevant installations for technology offerings not addressed in their Phase 2 submission. *Combine into one PDF.*

- **Letters of confirmation**. Applicable only for technology relevance reports referencing prior installations. Verify information from prior installations from contractors, customers (e.g.,

homeowners, renters, building tenants where the equipment is installed), or program administrators overseeing installations. *No page limit. Combined all pages into one uploaded file.*

DOE will provide the following submission templates:

- Pilot Initiative Tracking Workbook: Technology Suitability Table worksheet
- Technology demonstration report summary (same template as Phase 2)
- Technology relevance report (same template as Phase 2).

Templates are provided for the administrative convenience of the teams. The teams are not required to use the templates, but they must include all the information outlined in the template in the Appendix.

Minimum Requirements
Both pathways a. Team tested building upgrade scenarios in the same building type with similar usage patterns and weather/climate zone/seasonal conditions as the planned pilot initiative and collected data for the critical heating and cooling season[5] in the climate zone(s) where the pilot initiative took place. b. Team compared similar equipment, with similar outputs and efficiency levels, in similar design and installation conditions as their pilot initiative offerings. c. Team extrapolated financial estimates and occupant experience from past installations and/or technology demonstrations indicating that future upgrades can be anticipated to save the pilot initiative subscribers money on energy bills and/or provide an added benefit, such as cooling and improved comfort, to occupants. d. Team described how they used the lessons learned from the team-led technology demonstration(s) and/or prior installations/prior technology demonstrations to inform the offerings and the design of the pilot initiative and/or anticipated full-scale initiative.

2.4.4. Critical Success Factor 4: Pilot Initiative Goals and Metrics

Teams must complete the narrative and upload all applicable supporting documentation.

Narrative: minimum requirements and best practices*:* Required. *Limit 2,500 characters with spaces (approximately 1 page).* Summarize how your team met each minimum requirement and/or the best practices in Critical Success Factor 4. (Best practices are optional.) Clearly delineate the best practices, if applicable, from the minimum requirements.

DOE will provide the following submission templates:

- Pilot Initiative Tracking Workbook: Building Upgrade Tracker worksheet.

Templates are provided for the administrative convenience of the teams. The teams are not required to use the templates, but they must include all the information outlined in the template in the Appendix.

[5] Critical season includes a minimum of one heating and one cooling month to ensure that the technology performs in peak heating/cooling seasons. Annual performance data are not required.

Minimum Requirements
Both pathways: a. The team reported on the progress and outcomes of the team-defined metrics, including the baseline and goals identified in the Phase 2 Pilot Initiative Implementation Plan that occurred in Phase 3, and identified any new or different goals or metrics tracked in Phase 3. *Equity-Centered Innovation Pathway only:* b. At least 80% of the upgrades completed were completed in equity-eligible buildings.
Best Practices
Equity-Centered Innovation Pathway only: c. At least 95% of the upgrades completed were completed in equity-eligible buildings.

2.4.5. Critical Success Factor 5: Funding and Financing Building Upgrades

The teams must complete the narrative and upload all applicable supporting documentation.

Narrative: minimum requirements and best practices: Required. *Limit 7,500 characters with spaces (approximately 3 pages).* Summarize how your team met each minimum requirement and/or the best practices in Critical Success Factor 5. (Best practices are optional.) Clearly delineate the best practices, if applicable, from the minimum requirements.

Uploaded documentation:

- **Letter(s) of support from financial providers.** *Required for teams using a debt-based financing program. Combine into one PDF.*

DOE will provide the following submission templates:

- Pilot Initiative Tracking Workbook: Equity-Eligible Buildings worksheet.

Templates are provided for the administrative convenience of the teams. The teams are not required to use the templates, but they must include all the information outlined in the template in Appendix 4.1.

Minimum Requirements
Both pathways: a. The team describes which rebates, grants, and other sources of funding were leveraged to pay for the building upgrades. b. The team has a partnership with at least one financial provider if they are using a debt-based financing program, or the teams indicates that debt-based financing is not used. c. The team describes the challenges encountered related to funding and financing building upgrades and shares the lessons learned on overcoming the challenges, or the team states that they did not encounter any challenges.

d. For upgrades in buildings identified by the team as equity-eligible buildings, at least 75% of the installation cost was covered for subscribers and occupants (through incentives, rebates, grants, etc.).

Equity-Centered Innovation Pathway only:

e. The team describes how health and safety measures were addressed in the pilot initiative (e.g., the team completed health and safety measures, directed subscribers to other programs for support), as applicable. If these buildings were not upgraded, the team summarizes the challenges that led to the exclusion of buildings needing health and safety measures from the pilot initiative or indicated that none of the buildings considered required health and safety upgrades.

Best Practices

Both pathways:

f. The initiative or third-party source(s) identified by the initiative covered 100% of the upfront cost of each upgrade completed in the equity- eligible buildings during the pilot.

g. Funding to cover health and safety upgrades is included in the pilot initiative.

h. If housing is a focus of the initiative, the team includes membership by or has established a partnership with the state housing finance agency.

2.4.6. Critical Success Factor 6: Workforce and Supply Chain

The teams must complete the narrative and upload all applicable supporting documentation.

Narrative: minimum requirements and best practices: Required. *Limit 7,500 characters with spaces (approximately 3 pages).* Summarize how your team met each minimum requirement and/or the best practices in Critical Success Factor 6. (Best practices are optional.) Clearly delineate the best practices, if applicable, from the minimum requirements.

DOE will provide the following submission template:

- Pilot Initiative Tracking Workbook: Workforce Training Tracker worksheet.

Templates are provided for the administrative convenience of the teams. The teams are not required to use the templates, but they must include all the information outlined in the template in Appendix.

Minimum Requirements

Both pathways:

a. Team used the existing workforce or supported the development of an additional workforce to meet the initiative needs and described any challenges to securing the needed workforce, if applicable, or the team states that no challenges were encountered.

b. Certifications earned through the initiative for residential upgrades are Energy Skilled-recognized, where applicable. (Energy Skilled recognition is not applicable for commercial building upgrades/certifications.)

c. The team addressed supply chain deficiencies, if applicable, and described

how they overcame supply chain challenges, or the team states that no deficiencies were encountered. d. Team describes progress toward contractors meeting one or more of the U.S. Department of Labor's Good Jobs Principles, any challenges they faced, and what approaches were taken to overcome the challenges.[6]
Best Practices
Both pathways: e. Team put robust programs in place to ensure that economic opportunities and jobs adhere to the U.S. Department of Labor's Good Jobs Principles[7] for underrepresented and/or under-resourced contractors and suppliers.

2.4.7. Critical Success Factor 7: Subscriber Strategy and Approvals

The teams must complete the narrative and upload all applicable supporting documentation.

Narrative: Minimum Requirements and Best Practices*:* Required. *Limit 7,500 characters with spaces (approximately 3 pages).* Summarize how your team met each minimum requirement and/or the best practices in Critical Success Factor 7. (Best practices are optional.) Clearly delineate the best practices, if applicable, from the minimum requirements.

Uploaded documentation:

- **Pilot Initiative marketing and promotional material**. *Required. Combine into one PDF.*

Minimum Requirements
Both pathways: a. The team described the most effective approach(es) used for attracting subscribers to the pilot and described challenges to securing subscribers, or the team stated that no challenges were encountered. b. The team describes how their promotional and marketing material is tailored for the subscriber audience it wanted to enroll.
Equity-Centered Innovation Pathway only: c. Team described the steps taken to lower barriers to participation in the upgrade initiative (e.g., providing information in multiple languages, providing information sessions at different times/locations to reach underserved communities, and providing information in more ways than only online).

[6] See https://www.dol.gov/general/good-jobs/principles.
[7] See https://www.dol.gov/general/good-jobs/principles.

Best Practices
Both pathways: d. The team incorporates any local approvals required for building upgrades to take place in their jurisdiction as part of their initiative to streamline upgrades for subscribers. e. The team employs a "one-stop-shop" approach for subscribers. f. Team worked with a trusted community partner for outreach and engagement with subscribers.

2.4.8. Critical Success Factor 8: Quality Assurance and Consumer Protections

Teams must complete the narrative.

Narrative: minimum requirements and best practices*:* Required. *Limit 7,500 characters with spaces (approximately 3 pages).* Summarize how your team met each minimum requirement and/or the best practices in Critical Success Factor 8. (Best practices are optional.) Clearly delineate the best practices, if applicable, from the minimum requirements.

Minimum Requirements
Both pathways: a. Team employed a quality assurance process for pilot installations (e.g., using an installation checklist, third-party inspection, or software-based quality assurance tools). b. Team described challenges to quality assurance, or the team stated that no challenges were encountered. c. Team employed a process for addressing grievances from dissatisfied subscribers, including renters or occupants, and malfunctioning equipment. d. Team described how they guarded against energy bill increases for subscribers and occupants in equity-eligible buildings, unless an added benefit was provided (e.g., air conditioning from a heat pump) and the occupant accepted the cost increase through a formal acknowledgment.
Best Practices
Both pathways: e. The team included a process to encourage optimal performance of upgrades, such as educating building occupants or owners about maintenance requirements.

2.4.9. Critical Success Factor 9: Risk Assessment and Mitigation

Teams must complete the narrative.

Narrative: minimum requirements and best practices*:* Required. *Limit 7,500 characters with spaces (approximately 3 pages).* Summarize how your team met each minimum requirement and/or the best practices in Critical Success Factor 9. (Best practices are optional.) Clearly delineate the best practices, if applicable, from the minimum requirements.

Minimum Requirements
Both pathways: a. Team described the risks they identified in Phase 2 and how they addressed them and/or described any unanticipated risks they encountered during the pilot and how they were addressed. b. Team addressed negative impacts to disadvantaged or underserved communities (e.g., preventing displacement or rent increases), or the team stated they did not encounter any negative impacts resulting from the pilot.
Best Practices
Both pathways: c. Team used mitigation strategies suggested by communities to protect against unintended harm.

2.4.10. Critical Success Factor 10: Scaling and Replicability

Teams must complete the narrative.

Narrative: minimum requirements and best practices*:* Required. *Limit 7,500 characters with spaces (approximately 3 pages).* Summarize how your team met each minimum requirement and/or the best practices in Critical Success Factor 10. (Best practices are optional.) Clearly delineate the best practices, if applicable, from the minimum requirements.

Minimum Requirements
Both pathways: a. Team described the secured partnerships and workforce resources that are necessary to meet the anticipated building upgrade requirements for the full-scale initiative. The team described the funding and financing mechanisms that are anticipated to be used to meet the building upgrade requirements outlined in Table A and Table B for the full-scale initiative. The team noted any changes to the funding and financing sources from the pilot initiative, or the team noted that no funding changes are anticipated. b. Team described elements of the initiative that could be replicated in other communities, building types, or geographies and indicates whether steps to do so were taken during the pilot phase. c. Team identified challenges to scaling up and shared the lessons learned that will inform the full-scale initiative and/or help others to implement similar initiatives in the future
Best Practices
Both pathways: d. Team has established initial partnerships that may lead to replication or scaling of the initiative beyond the pilot building upgrade zone(s).

2.5. Part 4: Innovation Bonus Prize (Optional)

Teams competing for the Innovation Bonus Prize should describe their innovative approach(es) to overcoming persistent challenges to building upgrades or meeting the best practices in any of the Critical Success Factors during their pilot initiative and articulate how the approach(es) could be applicable in other communities or for other building types.

Uploaded documentation:

Narrative. *Up to 5 pages. Combine into one PDF.* Describe the elements of your completed pilot initiative that represent an innovative approach or best practice in the building upgrade zone(s), the community, or in the industry more broadly. There are four criteria to be addressed in the narrative. Each is scored on a scale from 1 to 6, explained in Section 2. The narrative must address:

a. The challenge or best practice the innovation addresses, including information to help reviewers determine how persistent the challenge is or how difficult the best practice is to achieve
b. The innovative approach your team employed to address the challenge or achieve the best practice, and why it is a novel or particularly successful approach
c. The elements of your innovation that make it applicable to other regions, communities, or building types
d. Your team's capabilities related to implementing the innovation.

Supporting documentation:

e. (Optional) Letters of support. No page limit. Please put all letters of support in one uploaded file.

f. (Optional) One page of graphics, photos, or other information to support your submission.

2.6. Part 5: Phase 3 Resubmission Narrative (Optional)

Teams that submit a submission package prior to a Phase 3 deadline but that are not selected for an award may include an *optional* resubmission narrative as part of their second submission package. This narrative, limited to 20 pages, allows teams to address any additional information or clarification in response to feedback provided from the initial submission review. No additional scoring criteria are associated with this additional narrative, but it allows teams to identify and explain changes in the second submission and evaluate whether the minimum requirement was met.

Uploaded documentation:

> **Narrative**. *Up to 20 pages. Combine into one PDF.* The teams may use the narrative to address the minimum requirements not met during the first submission.

2.7. How To Enter

Phase 2 winning teams interested in competing under Phase 3 of Buildings UP should go to HeroX and follow the instructions for submitting all the required materials before the specified Phase 3 submission deadline. Teams submit parts 1, 3, and 4 on the HeroX platform. Teams submit Part 2 to buildingsUP@nrel.gov. (See Section 2.3, Part 2 instructions for further details.)

Teams whose Phase 3 submission package did not receive a passing score will be permitted to resubmit once during Phase 3. Teams that submit incomplete submission packages may be alerted and allowed to rectify the submission within 10 business days. The submission package will not be reviewed unless complete.

3. How Phase 3 Submissions Are Evaluated

This section explains how the Phase 3 prize awards are determined. Teams must meet all minimum requirements relevant to their pathway, complete the minimum number of upgrades or achieve the minimum number of points in each building category included in their initiatives, and comply with the DOE Audit Package requirements to win a Phase 3 prize. The Audit Package will be collected after the Phase 3 submissions are received in accordance with the instructions shown in Section 2.

3.1. Parts 1, 2, 3 Evaluation

Parts 1, 2, and 3 of the submission package include narratives and supporting documentation that are reviewed together against the minimum criteria to determine if a team wins Phase 3. The teams must meet all the minimum requirements to pass Phase 3. Best practices are optional. Awards are determined after submissions are verified through the Part 2 Audit Package process.

3.2. Part 4 Innovation Bonus Prize Evaluation

Innovation Bonus Prizes will be evaluated on a scale from 1 to 6 based on how novel and replicable the approach is, how difficult or prevalent the challenge addressed is to overcome, and the likelihood that the approach will successfully overcome the stated challenge. The narrative will be evaluated by reviewers assigning a 1 (low) to 6 (high) score to each of the following statements:

Scored Statement	Scoring Range					
Criterion 1: Novelty						
The innovation described is a new approach to the challenge or resulted in significant progress in a best practice area.	1	2	3	4	5	6
	Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree
Criterion 2: Replicability						
The innovation or best practice described can be replicated in other communities, geographies, or building types.	1	2	3	4	5	6
	Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree
Criterion 3: Level of Challenge						
The challenge is persistent, or the best practice is difficult to address.	1	2	3	4	5	6
	Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree
Criterion 4: Approach						
The team demonstrates a good understanding of the challenge or best practice and employes a sound approach to addressing it.	1	2	3	4	5	6
	Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree

4. Appendix

The appendix contains additional resources and background information on Buildings UP from Phases 1 and 2 that holds true for Phase 3, such as eligibility, payment details, terms, and conditions, as well as a glossary of terms as defined for Buildings UP.

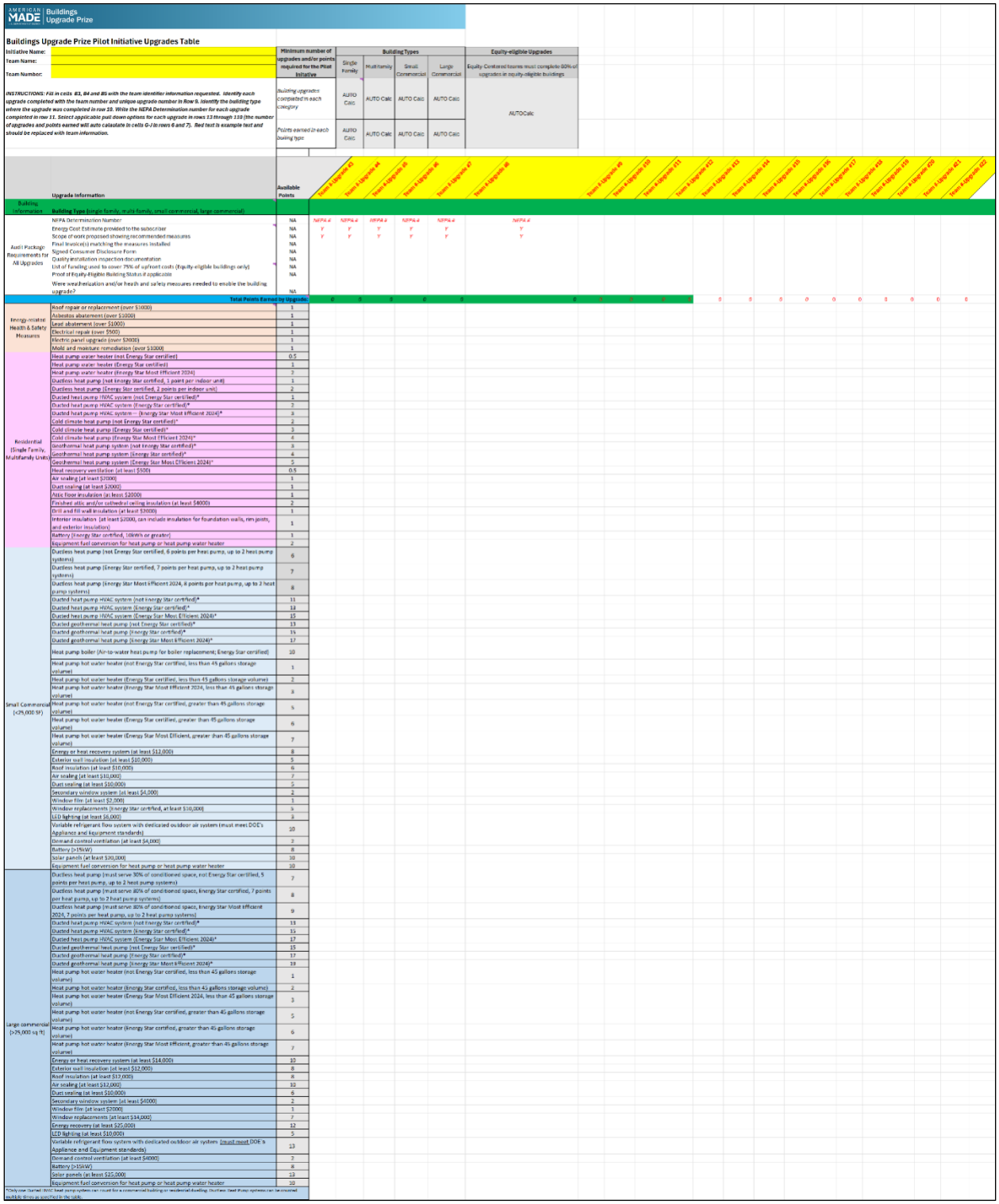
4.1. DOE-Provided Templates

To assist the teams, DOE is providing elective templates to illustrate the types of information needed to evaluate whether teams meet the minimum requirements. The teams are not required to use these templates, but submissions should address the substantive items in the templates shown below. Templates for team use are located at https://www.herox.com/BuildingsUP/resources.

4.1.1. Phase 3 Templates: Pilot Initiative Tracking Workbook

- Phase 3 Pilot Initiative Tracking Workbook: https://www.herox.com/BuildingsUP/resource/2079

Figure 1: Phase 3 Building Upgrade Tracker Template



Buildings Upgrade Prize Pilot Initiative Upgrades Table

Initiative Name:
Team Name:
Team Number:

INSTRUCTIONS: Fill in cells B3, B4 and B5 with the team identifier information requested. Identify each upgrade completed with the team number and unique upgrade number in Row 9. Identify the building type where the upgrade was completed in row 10. Write the NEPA Determination number for each upgrade completed in row 11. Select applicable pull down options for each upgrade in rows 13 through 110 (the number of upgrades and points earned will auto calculate in cells G-J in rows 6 and 7). Red text is example text and should be replaced with team information.

	Minimum number of upgrades and/or points required for the Pilot Initiative	Building Types				Equity-eligible Upgrades
		Single Family	Multifamily	Small Commercial	Large Commercial	Equity-Centered teams must complete 80% of upgrades in equity-eligible buildings
Building upgrades completed in each category		AUTO Calc	AUTO Calc	AUTO Calc	AUTO Calc	AUTOCalc
Points earned in each building type		AUTO Calc	AUTO Calc	AUTO Calc	AUTO Calc	

	Upgrade Information	Available Points	Team A Upgrade #1	Team A Upgrade #2	Team A Upgrade #3	Team A Upgrade #4	Team A Upgrade #5	Team A Upgrade #6	Team A Upgrade #7	Team A Upgrade #8	Team A Upgrade #9	Team A Upgrade #10	Team A Upgrade #11	Team A Upgrade #12	Team A Upgrade #13	Team A Upgrade #14	Team A Upgrade #15	Team A Upgrade #16	Team A Upgrade #17	Team A Upgrade #18	Team A Upgrade #19	Team A Upgrade #20	Team A Upgrade #21	Team A Upgrade #22
Building Information	**Building Type** (single family, multi-family, small commercial, large commercial)																							
Audit Package Requirements for All Upgrades	NEPA Determination Number	NA	NEPA #	NEPA #	NEPA #	NEPA #	NEPA #	NEPA #		NEPA #														
	Energy Cost Estimate provided to the subscriber	NA	Y	Y	Y	Y	Y	Y		Y														
	Scope of work proposed showing recommended measures	NA	Y	Y	Y	Y	Y	Y		Y														
	Final Invoice(s) matching the measures installed	NA																						
	Signed Consumer Disclosure Form	NA																						
	Quality installation inspection documentation	NA																						
	List of funding used to cover 75% of upfront costs (Equity-eligible buildings only)	NA																						
	Proof of Equity-Eligible Building Status if applicable	NA																						
	Were weatherization and/or health and safety measures needed to enable the building upgrade?	NA																						
	Total Points Earned by Upgrade:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Energy-related Health & Safety Measures	Roof repair or replacement (over $1000)	1																						
	Asbestos abatement (over $1000)	1																						
	Lead abatement (over $1000)	1																						
	Electrical repair (over $500)	1																						
	Electric panel upgrade (over $3000)	1																						
	Mold and moisture remediation (over $1000)	1																						
Residential (Single Family, Multifamily Units)	Heat pump water heater (not Energy Star certified)	0.5																						
	Heat pump water heater (Energy Star certified)	1																						
	Heat pump water heater (Energy Star Most Efficient 2024)	2																						
	Ductless heat pump (not Energy Star certified, 1 point per indoor unit)	1																						
	Ductless heat pump (Energy Star certified, 2 points per indoor unit)	2																						
	Ducted heat pump HVAC system (not Energy Star certified)*	1																						
	Ducted heat pump HVAC system (Energy Star certified)*	2																						
	Ducted heat pump HVAC system — (Energy Star Most Efficient 2024)*	3																						
	Cold climate heat pump (not Energy Star certified)*	2																						
	Cold climate heat pump (Energy Star certified)*	3																						
	Cold climate heat pump (Energy Star Most Efficient 2024)*	4																						
	Geothermal heat pump system (not Energy Star certified)*	3																						
	Geothermal heat pump system (Energy Star certified)*	4																						
	Geothermal heat pump system (Energy Star Most Efficient 2024)*	5																						
	Heat recovery ventilation (at least $500)	0.5																						
	Air sealing (at least $2000)	1																						
	Duct sealing (at least $2000)	1																						
	Attic floor insulation (at least $2000)	1																						
	Finished attic and/or cathedral ceiling insulation (at least $4000)	2																						
	Drill and fill wall insulation (at least $3000)	1																						
	Interior insulation (at least $2000, can include insulation for foundation walls, rim joists, and exterior insulation)	1																						
	Battery (Energy Star certified, 10kWh or greater)	1																						
	Equipment fuel conversion for heat pump or heat pump water heater	2																						
Small Commercial (<25,000 SF)	Ductless heat pump (not Energy Star certified, 6 points per heat pump, up to 2 heat pump systems)	6																						
	Ductless heat pump (Energy Star certified, 7 points per heat pump, up to 2 heat pump systems)	7																						
	Ductless heat pump (Energy Star Most Efficient 2024, 8 points per heat pump, up to 2 heat pump systems)	8																						
	Ducted heat pump HVAC system (not Energy Star certified)*	11																						
	Ducted heat pump HVAC system (Energy Star certified)*	13																						
	Ducted heat pump HVAC system (Energy Star Most Efficient 2024)*	15																						
	Ducted geothermal heat pump (not Energy Star certified)*	13																						
	Ducted geothermal heat pump (Energy Star certified)*	15																						
	Ducted geothermal heat pump (Energy Star Most Efficient 2024)*	17																						
	Heat pump boiler (Air-to-water heat pump for boiler replacement; Energy Star certified)	10																						
	Heat pump hot water heater (not Energy Star certified, less than 45 gallons storage volume)	1																						
	Heat pump hot water heater (Energy Star certified, less than 45 gallons storage volume)	2																						
	Heat pump hot water heater (Energy Star Most Efficient 2024, less than 45 gallons storage volume)	3																						
	Heat pump hot water heater (not Energy Star certified, greater than 45 gallons storage volume)	¼																						
	Heat pump hot water heater (Energy Star certified, greater than 45 gallons storage volume)	6																						
	Heat pump hot water heater (Energy Star Most Efficient, greater than 45 gallons storage volume)	7																						
	Energy or heat recovery system (at least $12,000)	8																						
	Exterior wall insulation (at least $10,000)	5																						
	Roof insulation (at least $10,000)	6																						
	Air sealing (at least $10,000)	7																						
	Duct sealing (at least $10,000)	5																						
	Secondary window system (at least $4,000)	2																						
	Window film (at least $2,000)	1																						
	Window replacements (energy star certified, at least $10,000)	5																						
	LED lighting (at least $6,000)	3																						
	Variable refrigerant flow system with dedicated outdoor air system (must meet DOE's Appliance and Equipment standards)	10																						
	Demand control ventilation (at least $4,000)	2																						
	Battery (>15kW)	8																						
	Solar panels (at least $20,000)	10																						
	Equipment fuel conversion for heat pump or heat pump water heater	10																						
Large commercial (>25,000 sq ft)	Ductless heat pump (must serve 30% of conditioned space, not Energy Star certified, 5 points per heat pump, up to 2 heat pump systems)	7																						
	Ductless heat pump (must serve 80% of conditioned space, Energy Star certified, 7 points per heat pump, up to 2 heat pump systems)	8																						
	Ductless heat pump (must serve 80% of conditioned space, Energy Star Most Efficient 2024, 7 points per heat pump, up to 2 heat pump systems)	9																						
	Ducted heat pump HVAC system (not Energy Star certified)*	13																						
	Ducted heat pump HVAC system (Energy Star certified)*	15																						
	Ducted heat pump HVAC system (Energy Star Most Efficient 2024)*	17																						
	Ducted geothermal heat pump (not Energy Star certified)*	15																						
	Ducted geothermal heat pump (Energy Star certified)*	17																						
	Ducted geothermal heat pump (Energy Star Most Efficient 2024)*	19																						
	Heat pump hot water heater (not Energy Star certified, less than 45 gallons storage volume)	1																						
	Heat pump hot water heater (Energy Star certified, less than 45 gallons storage volume)	2																						
	Heat pump hot water heater (Energy Star Most Efficient 2024, less than 45 gallons storage volume)	3																						
	Heat pump hot water heater (not Energy Star certified, greater than 45 gallons storage volume)	5																						
	Heat pump hot water heater (Energy Star certified, greater than 45 gallons storage volume)	6																						
	Heat pump hot water heater (Energy Star Most Efficient, greater than 45 gallons storage volume)	7																						
	Energy or heat recovery system (at least $14,000)	10																						
	Exterior wall insulation (at least $12,000)	8																						
	Roof insulation (at least $17,000)	8																						
	Air sealing (at least $12,000)	10																						
	Duct sealing (at least $10,000)	6																						
	Secondary window system (at least $4000)	2																						
	Window film (at least $2000)	1																						
	Window replacements (at least $14,000)	7																						
	Energy recovery (at least $25,000)	12																						
	LED lighting (at least $10,000)	5																						
	Variable refrigerant flow system with dedicated outdoor air system (must meet DOE's Appliance and Equipment standards)	13																						
	Demand control ventilation (at least $4000)	3																						
	Battery (>15kW)	8																						
	Solar panels (at least $25,000)	13																						
	Equipment fuel conversion for heat pump or heat pump water heater	10																						

*Only one (same) HVAC heat pump system can count for a commercial building or residential dwelling. Ductless heat pump systems can be counted multiple times as applicable in the table.

Figure 2: Phase 3 Administrative Budget and Staffing Table Template

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Instructions: List all sources of funding that support the administrative costs of the Pilot Building Upgrade Initiative. Funding for equipment purchases should not be included in this table. Add rows as needed. Red example text should be removed and replaced with team information.

Pilot Initiatve Administrative Funding Table

Funding Source	Amount
Buildings UP Prize Funding	*$400,000*
USA Building Decarbonization Grant	*$350,000*
USA Foundation Grant	*$200,000*
Total Administrative Budget	***$950,000***

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Budget and Staffing Table

Instructions: List all organizations on the team in Phase 3. Include allocated funding amount, FTEs, and initiative areas they are leading and/or supporting. Add rows as needed. Red example text should be removed and replaced with team information.

Team Member Organization	Total Budget Allocated to Organization	Total Full Time Equivelent (FTE) Employee(s)	Area(s) of Responsibility - Leading	Area(s) of Responsibility - Supporting
[Insert Team Member Organization Name]	*[Insert Funding Allocated to each Team Member Organization]*	*Insert number of FTEs dedicated to Buildings UP per organization (may be*	*List the area(s) each team member organization is leading*	*List the area(s) each team member organization is supporting*
Ex: Organization A	*$550,000*	*1.5 FTEs*	*Initiative Program Administration, Stakeholder Engagement*	*Financing & Fundraising*
Ex: Organization B	*$150,000*	*0.5 FTE*	*City Council Engagement*	*Initiative Program Administration, Stakeholder Engagement, Financing & Fundraising*
Ex: Community-Based Organization C	*$250,000*	*1 FTE*	*Workforce Development, Community Engagement*	*Initiative Program Administration*
Totals	***$950,000***	***3 FTEs***		

Figure 3: Phase 3 Technology Suitability Table Template

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Instructions: Teams should fill in the table below to indicate which building types and technologies are included in the team's initiative. Indicate which of the available options the team is using to show the technologies are suitable for the building type(s) within the initative offering. (Options for Demonstrating Technology Suitability include submitting a Technology Relevance Report referencing an existing tech demo or 3 prior installations or submitting a Technology Demonstration Report showing results from a Team-led tech demo in Phase 3. Red italicized text in the table is example text and should be replaced with team information.)

Team: INSERT TEAM NAME HERE

Initiative Building Type	Equipment/Technology Offering	Test Climate Zone	Initiative Climate Zone	Test Building Type	Technology Demonstration Compliance Path	Phase 3 Uploaded Report Name/ Documentation (Note: Phase 2 approval email if approved in Phase 2)
Single-family	*Ducted Heat Pump*	*4a*	*4a*	*Single-family*	*Phase 3 Team-led Technology Deomonstration*	*Team A Single-family Ducted Heat Pump Technology Demo Report.doc*
	Heat Pump Water Heater (HPWH)	*4a*	*4a*	*Single-family*	*Phase 2 Technology Relevance Report- Three Prior Installations*	*Phase 2 Approval Email*
Multifamily	*Ductless Heat Pump*	*4a*	*4a*	*Multifamily*	*Phase 3 Team-led Technology Demonstration*	*Team A Multifamily Ductless Heat Pump Technology Demonstration Report.doc*
	Heat Pump Water Heater	*4a*	*4a*	*Multifamily*	*Phase 3 Team-led Technology Demonstration*	*Team A Multifamily Heat Pump Water Heater Technology Demonstration Report.doc*
Small Commercial	*Central Heat Pump Water Heater*	*5a*	*5a*	*Church*	*Phase 3 Technology Relevance Report- Prior Technology Demonstration*	*Technology Relevance Report for Prior Technology Demonstration Team USA Heat Pump Water Heaters in Houses of Worship.pdf* *Houses of Worship Tech Demonstration Report. pdf* *Brand X Model Y Heat Pump Water Heater Cutsheet.pdf*

Figure 4: Phase 3 Workforce Training Tracker Template

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Fill in this table if you provided workforce training through the pilot initative. Add rows as needed. Red example text should be removed and replaced with team information.

Training Course Title	Training focus area(s)	Name of Training Organization	Number of People Trained	Was the training Energy Skilled recotnized? (not required)	Name of Certification Associated with Training (if applicable)	Number of People Certified	Was Certification Energy Skilled recognized (if apllicable)?
Ex: Heat Pump Water Heating Certification Course	*Heat Pump Water Heaters*	*AO Smith University*	*25*	*No*	*Voltex® AL Smart Heat Pump Certification*	*15*	*Yes*
Ex: Energy Auditor Training	*Home Energy Audits*	*Building Efficiency Resources*	*10*	Yes	*RESNET Certified Home Rater*	*7*	*Yes*

Figure 5: Phase 3 Equity-Eligible Buildings Template

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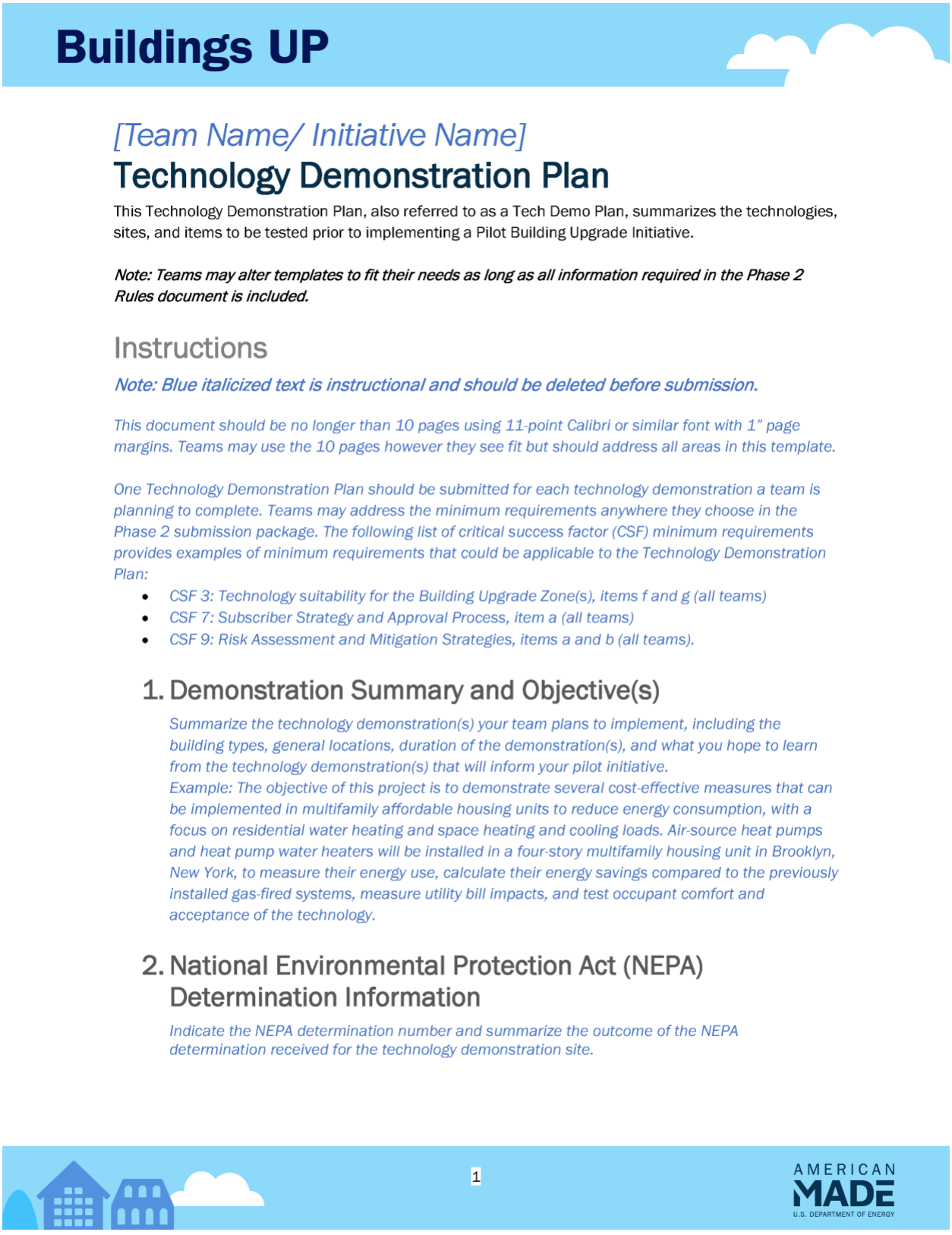
Equity-Centered Innovation Pathway teams must indicate which of the upgrades occurred in equity-eligible buildings and how much of the upfront cost was covered by rebates, incentives and other funding idenfied through the initiative. Red example text should be removed and replaced with team information. Applicable to Open Innovation Teams for upgrades completed in equity-eligible buildings.

Upgrade #	Equity-eligible building category	Total cost of upgrade	Costs covered by upgrade	% Upfront costs covered	List funding or financing programs leveraged to cover each upgrade
Ex: 5	*Affordable Housing*	*$8,000*		*75%*	
Ex: 6	*Locally-defined disadvantaged area*	*$10,000*		*80%*	
Ex: 8	*Upgrade on tribal land*	*$7,500*		*100%*	

4.1.2. Applicable Phase 2 Templates: Technology Demonstration Plan and Technology Relevance Reports

- Phase 2 Technology Demonstration Plan Template: https://www.herox.com/BuildingsUP/resource/1669
- Phase 2 Technology Relevance Report Template –Technology Demonstration: https://www.herox.com/BuildingsUP/resource/1773
- Phase 2 Technology Relevance Report Template – Three Prior Installations: https://www.herox.com/BuildingsUP/resource/1774

Figure 6: Phase 2 Technology Demonstration Plan Template



Buildings UP

[Team Name/ Initiative Name]

Technology Demonstration Plan

This Technology Demonstration Plan, also referred to as a Tech Demo Plan, summarizes the technologies, sites, and items to be tested prior to implementing a Pilot Building Upgrade Initiative.

Note: Teams may alter templates to fit their needs as long as all information required in the Phase 2 Rules document is included.

Instructions

Note: Blue italicized text is instructional and should be deleted before submission.

This document should be no longer than 10 pages using 11-point Calibri or similar font with 1" page margins. Teams may use the 10 pages however they see fit but should address all areas in this template.

One Technology Demonstration Plan should be submitted for each technology demonstration a team is planning to complete. Teams may address the minimum requirements anywhere they choose in the Phase 2 submission package. The following list of critical success factor (CSF) minimum requirements provides examples of minimum requirements that could be applicable to the Technology Demonstration Plan:

- *CSF 3: Technology suitability for the Building Upgrade Zone(s), items f and g (all teams)*
- *CSF 7: Subscriber Strategy and Approval Process, item a (all teams)*
- *CSF 9: Risk Assessment and Mitigation Strategies, items a and b (all teams).*

1. Demonstration Summary and Objective(s)

Summarize the technology demonstration(s) your team plans to implement, including the building types, general locations, duration of the demonstration(s), and what you hope to learn from the technology demonstration(s) that will inform your pilot initiative.
Example: The objective of this project is to demonstrate several cost-effective measures that can be implemented in multifamily affordable housing units to reduce energy consumption, with a focus on residential water heating and space heating and cooling loads. Air-source heat pumps and heat pump water heaters will be installed in a four-story multifamily housing unit in Brooklyn, New York, to measure their energy use, calculate their energy savings compared to the previously installed gas-fired systems, measure utility bill impacts, and test occupant comfort and acceptance of the technology.

2. National Environmental Protection Act (NEPA) Determination Information

Indicate the NEPA determination number and summarize the outcome of the NEPA determination received for the technology demonstration site.

3. Demonstration Overview Table

Describe site characteristics, including building type, general location, existing fuel type of any equipment to be replaced, technologies selected for installation (brands, sizes, model numbers), anticipated installation date, duration of demo (from breaking ground to end of data collection), and installation company/contractor.

Table 1. Technology Demonstration Summary

Building Type	**General Location**	**Existing Fuel Type** of Equipment to Be Replaced	**Technologies Planned** (Brands, Sizes, Model Numbers)	**Anticipated Installation Date**	**Duration of Tech Demo in Months** (From Breaking Ground to End of Data Collection)	**Installation Company/ Contractor**
Ex: Detached single-family residence	*Suburb of Omaha, Nebraska*	*Natural gas boiler*	*USA Model 123*	*September 2024*	*September 2024–September 2025*	*Nebraska Heat Pump Company*

4. Demonstration Project Budget Table

Provide anticipated installation costs and funding/financing sources for the tech demo(s). Installation costs may include, to the extent applicable, technology monitoring and third-party evaluation costs, participant and trade ally recruitment, occupant training, demonstration project administration and management, and site remediation costs.

Table 2. Demonstration Project Budget

Budget Item	*Anticipated Costs ($)*	*Funding/Financing Source*
Ex: Air-source heat pump	*$6,500*	*Utility incentive* *Federal tax credit* *Customer*
Ex: Insulation and air sealing	*$6,000*	*Utility incentive* *Energy trust*
Ex: Monitoring/third-party evaluation	*$2,500*	*State funding*
Ex: Site remediation/contingency allowance	*$5,000*	*State funding*
Total	*$20,000*	

5. Data Collection Plan

Provide details on who will monitor the technology demonstration, what data will be collected, how it will be collected, and over what time frame it will be collected. Indicate the items you are testing prior to the Pilot Building Upgrade Initiative rollout.

Table 3. Data Collection Plan Summary

Technology or Item to de Demonstrated	**Responsible Party – Monitoring**	**Items to be Measured** (e.g., noise, thermal comfort, energy use/savings, utility bill impacts)	**Data Collection Method** (e.g., metered energy use, end user feedback, data loggers, etc.)	**Time Frame of Data Collection** (e.g., months and seasons for which heat pumps should be measured for the climate zone)
USA Model air-source heat pump	*ABC Engineering*	*Energy usage* *Resident satisfaction*	*USA Model kWh data logger* *Pre- and post-install occupant surveys*	*One year pre-install electric usage and a minimum of 6 months post-install usage*

6. Quality Assurance/Quality Control

Describe how the team will ensure high-quality installations, trained installers/contractors, minimal disruption to occupants, and other quality considerations. The descriptions may include elements such as measures for customer health and safety and steps for addressing grievances from dissatisfied occupants of demonstration sites.

Example: Occupants of the demonstration sites were asked to fill out pre- and post-demonstration questionnaires. The pre-demonstration questions asked residents to describe the equipment used in their home and the frequency of use pre-demonstration. The post-demonstration questions asked the residents whether the installation or use of their new equipment interfered with or impacted their normal day-to-day operations or comfort level.

7. Anticipated Outcomes

Describe anticipated outcomes from the demonstration, such as cost savings, energy savings, environmental benefits, determination of technological feasibility, utility bill impacts, occupant comfort impacts, disruption during installation, and acceptance of the technology. Indicate how the outcomes will be evaluated.

8. Risk Assessment and Mitigation Plan

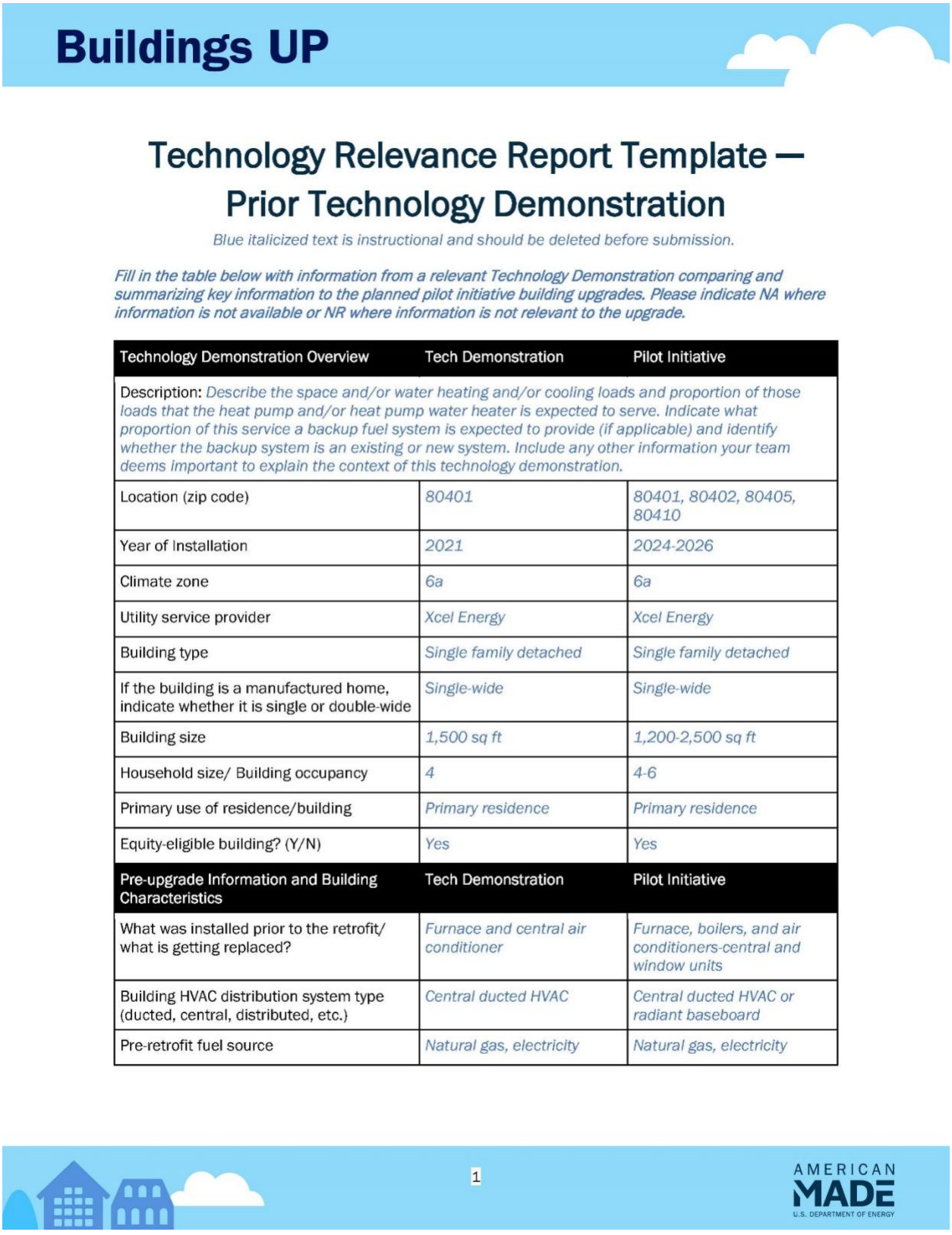
Describe all potential risks to the technology demonstration plan and strategies for how they will be mitigated (e.g., having backup sites ready if needed, time frames for securing qualified installers/contractors, risks to occupants).

Table 4. Risk and Mitigation Strategies

Risk Description (e.g., nature, location/timing, and magnitude of risk)	**Mitigation Strategy**
Ex: Identified demonstration site becomes unavailable	*We identified a backup demonstration site one block away with the same building characteristics to conduct the demo*

END OF TEMPLATE

Figure 7: Phase 2 Technology Relevance Report Template - Technology Demonstration



Buildings UP

Technology Relevance Report Template — Prior Technology Demonstration

Blue italicized text is instructional and should be deleted before submission.

Fill in the table below with information from a relevant Technology Demonstration comparing and summarizing key information to the planned pilot initiative building upgrades. Please indicate NA where information is not available or NR where information is not relevant to the upgrade.

Technology Demonstration Overview	Tech Demonstration	Pilot Initiative
Description: *Describe the space and/or water heating and/or cooling loads and proportion of those loads that the heat pump and/or heat pump water heater is expected to serve. Indicate what proportion of this service a backup fuel system is expected to provide (if applicable) and identify whether the backup system is an existing or new system. Include any other information your team deems important to explain the context of this technology demonstration.*		
Location (zip code)	*80401*	*80401, 80402, 80405, 80410*
Year of Installation	*2021*	*2024-2026*
Climate zone	*6a*	*6a*
Utility service provider	*Xcel Energy*	*Xcel Energy*
Building type	*Single family detached*	*Single family detached*
If the building is a manufactured home, indicate whether it is single or double-wide	*Single-wide*	*Single-wide*
Building size	*1,500 sq ft*	*1,200-2,500 sq ft*
Household size/ Building occupancy	*4*	*4-6*
Primary use of residence/building	*Primary residence*	*Primary residence*
Equity-eligible building? (Y/N)	*Yes*	*Yes*
Pre-upgrade Information and Building Characteristics	**Tech Demonstration**	**Pilot Initiative**
What was installed prior to the retrofit/ what is getting replaced?	*Furnace and central air conditioner*	*Furnace, boilers, and air conditioners-central and window units*
Building HVAC distribution system type (ducted, central, distributed, etc.)	*Central ducted HVAC*	*Central ducted HVAC or radiant baseboard*
Pre-retrofit fuel source	*Natural gas, electricity*	*Natural gas, electricity*

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AMERICAN MADE U.S. DEPARTMENT OF ENERGY

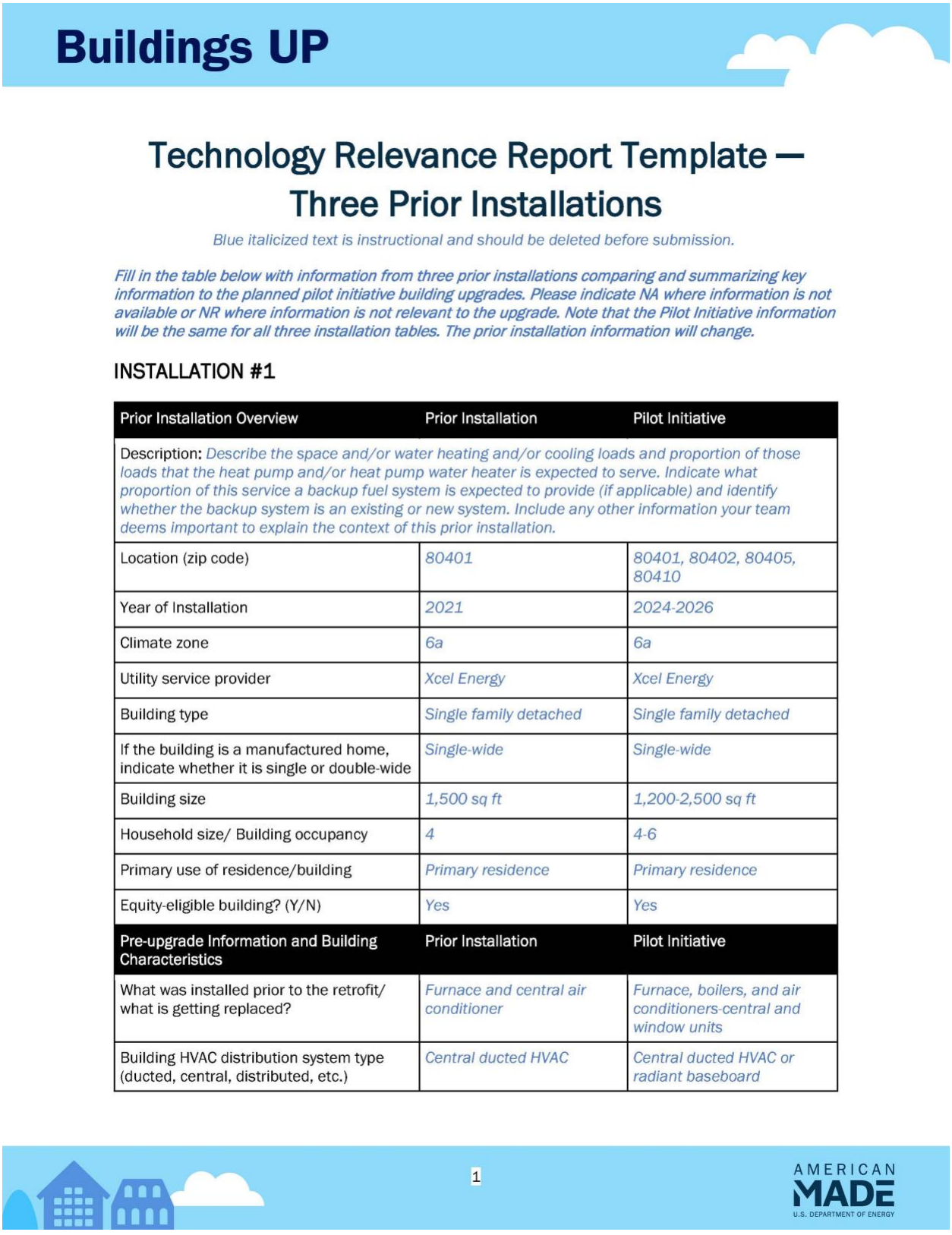
Energy-related pre-retrofit upgrades needed (e.g. health and safety measures, panel upgrade, weatherization, etc.)	*None*	*Potential panel upgrades*
Equipment installation location / constraints (e.g. in-unit, closet, mechanical room, etc.)	*Mechanical room in basement, outdoor unit side of home*	*Mechanical rooms, side of homes for outdoor units*
Condition of the equipment location (e.g. conditioned, unconditioned, semi-conditioned space), indoor and/or outdoor units.	*Semi-conditioned indoor space/exposed outdoor unit*	*Anticipating semi- and conditioned mechanical rooms and exposed outdoor units.*
Was cooling provided prior to the upgrade?	*Yes*	*NA*
Was advanced metering or smart thermostat control available pre-upgrade?	*No*	*NA*
Rough size of the area/room/closet where indoor equipment is/will be installed	*100 sq ft*	*100-150 sq ft*
Design Considerations	**Tech Demo**	**Pilot Initiative**
Did/will the system include back up/dual fuel?	*Yes*	*Yes*
If so, was/will the backup fuel system (be) new or existing?	*New*	*NA*
Was/is the equipment intended to provide all heating for the home/unit/building or partial? What are the expected scenarios for the pilot initiative?	*No. In weather below 20 degrees Fahrenheit, backup system heats the home.*	*Systems will supply a majority of the annual heat but have gas backup for cold days.*
Was/is the new equipment intended to provide all space cooling for the home/unit/building or partial? What are the expected scenarios for the pilot initiative?	*Yes*	*Yes*
What load calculations were/will be done (e.g. heating, cooling and latent loads) in the tech demo and pilot initiative?	*Manual J*	*Manual J*
How was/will humidity be monitored and managed?	*Not monitored*	*Not monitored*
How was/ will noise level be monitored and managed?	*It was monitored with a decibel meter. Occupant noted noise issues, so noise dampening mitigation was installed.*	*Installations will take place in mechanical rooms in basements. Noise mitigation can be offered if anticipated need.*
How was/will air flow be monitored and managed?	*New vent was installed in mechanical room to increase airflow.*	*Vent will be installed in mechanical rooms/closets where needed.*

Describe other design considerations involved with the prior tech demo and considerations you expect to see in the pilot initiative.	*Considered adding a drain to catch condensation, but it was not necessary.*	*Condensation drain will be evaluated on case-by-case basis. Contractors will be trained to evaluate and install.*
Post-Upgrade	**Tech Demonstration**	**Pilot Initiative**
Equipment/technology type (e.g. air source heat pump, heat pump water heater, etc.)	*Air source heat pump*	*Air source heat pump*
Equipment model name and number	*Fake Model USA*	*Fake Model USA 1, Fake Model USA 2*
Equipment capacity/ tank size /voltage rating (e.g. 120v or 240v Heat Pump Water Heater)	*3 ton*	*2 ton – 3 ton*
Equipment efficiency rating(s) (e.g. Heating Seasonal Performance Factor - HSPF, Seasonal Energy Efficiency Ratio- SEER)	*SEER2 17.5, HSPF 8.1*	*SEER2 15.2-17, HSPF2 7.8-8.1*
Compressor type	*Variable speed*	*Variable speed*
Sound performance (dBA)	*<70 dBA*	*<50 – 70 dBA*
Post-retrofit fuel source	*Electricity*	*Electricity*
Back up fuel type (if applicable)	*Natural gas*	*Natural gas*
List any pre-retrofit upgrades needed (e.g. health / safety measures, panel upgrade, etc.)	*None*	*Potential panel upgrades*
Equipment installation location / constraints (e.g. in-unit, closet, mechanical room, etc.)	*Mechanical room in basement*	*Mechanical room*
Condition of the equipment location (e.g. conditioned, unconditioned, semi-conditioned space)	*Semi-conditioned*	*Anticipating semi- and conditioned mechanical rooms*
Installation challenges and/or adjustments made to alter the location to accommodate the equipment	*Smaller mechanical room without adequate space around the unit, had to install extra ventilation for optimal operation*	*Potential for similar alterations to increase airflow around unit*
Data Collection and Results	**Tech Demonstration**	**Pilot Initiative**
Data collection timeframe (e.g. period for which the information is relevant)	*Jan 2021-Dec 2021*	*6-month and 1-year post installation*
Data collected/what will be collected through the pilot initiative	*Utility bills, occupant comfort, customer*	*Occupant comfort, customer installation experience, and energy bill impacts*

	installation experience, tech demo report	
Data collection methodology- (e.g. collected through interviews, summarized from tech demo report, etc.)	*Interview with heat pump installer and homeowner/occupant*	*Customer survey sent via mail and email*
Financial Impacts*	**Technology Demonstration Financials**	**Pilot Initiative Example (estimate based on Tech Demo savings using current, local costs, rebates, rates)**
Installed cost	*$8,000*	*$9,500*
Incentives, rebates applied	*$2,000*	*$4,500*
Net cost to customer	*$6,000*	*$5,000*
Annual pre-retrofit energy use (e.g. gas, electric, propane, etc.)	*10,310 kWh electricity, 678 therms natural gas (whole home)*	*NA*
Annual post-retrofit energy use (e.g. gas, electric, etc.)	*12,310 kWh, 239 therms annually (whole house)*	*NA*
Energy rates per kWh, therm, etc.	*$0.13/kWh, $0.95/therm*	*$0.15/kWh, $1.14/therm*
First year energy bill impacts (anticipated increase or savings)	*Savings $157.05 annually*	*Savings $200.46 annually*
**Teams can work with TAPs to estimate financials using Tech Demo information. Financials can be extrapolated based on energy performance and savings from Tech Demos using current rates, rebates, costs, etc.*		
Summary of Results, Relevance, and Lessons Learned		
Summarize performance results	*The heat pump provided ~85% of the home's heat over the heating season (Oct-Apr), the remainder was provided by the gas furnace. While ASHP could provide heating below 20 degrees Fahrenheit, backup fuel system is more cost effective at colder temperatures. Cooling capacity is greater than the home's need and is not used to its full capacity.*	
Summarize occupant feedback	*Energy bill savings and thermal comfort were as expected. The occupant found the unit to be louder than expected in the winter, which caused them to install a DIY solution to dampen noise from the mechanical room. Lead time on obtaining the equipment was twice as long as anticipated, causing frustration.*	
Identify any other challenges or items your team considered in selecting this tech demo	*Airflow in the maintenance room was a challenge we anticipate we may face in our pilot, so we wanted to reference this Tech Demo and learn from it. A new vent was put into the mechanical room to increase airflow.*	

Summarize how the team will mitigate any negative experiences from this technology demonstration in the pilot initiative	*Supply chain issues are resolved since 2021 and our team has checked with local distributors to ensure we have enough equipment for our pilot. Sound dampening material may be installed in some locations where appropriate. Noise will be addressed with contractors as a disclosure measure with potential subscribers. Backup systems will be set to provide heating below 20 degrees Fahrenheit. We anticipate that additional venting may be needed in smaller spaces to increase airflow around the unit and have cost information from the Tech Demo about that upgrade measure.*
Team summary of Tech Demo results and relevance to their pilot initiative	*The customer reported their ASHP performed as expected in the first year of operation in a relevant scenario to what we will implement in our Pilot Initiative. We will offer similar models with similar capacities and efficiency ratings to the Tech Demo and expect to install ASHPs in homes with similar characteristics. Therefore, we believe this prior Tech Demo adequately demonstrates our pilot offerings are appropriate for our pilot initiative climate zone and building type.*

Figure 8: Phase 2 Technology Relevance Report Template - Three Prior Installations



Buildings UP

Technology Relevance Report Template — Three Prior Installations

Blue italicized text is instructional and should be deleted before submission.

Fill in the table below with information from three prior installations comparing and summarizing key information to the planned pilot initiative building upgrades. Please indicate NA where information is not available or NR where information is not relevant to the upgrade. Note that the Pilot Initiative information will be the same for all three installation tables. The prior installation information will change.

INSTALLATION #1

Prior Installation Overview	Prior Installation	Pilot Initiative
Description: *Describe the space and/or water heating and/or cooling loads and proportion of those loads that the heat pump and/or heat pump water heater is expected to serve. Indicate what proportion of this service a backup fuel system is expected to provide (if applicable) and identify whether the backup system is an existing or new system. Include any other information your team deems important to explain the context of this prior installation.*		
Location (zip code)	*80401*	*80401, 80402, 80405, 80410*
Year of Installation	*2021*	*2024-2026*
Climate zone	*6a*	*6a*
Utility service provider	*Xcel Energy*	*Xcel Energy*
Building type	*Single family detached*	*Single family detached*
If the building is a manufactured home, indicate whether it is single or double-wide	*Single-wide*	*Single-wide*
Building size	*1,500 sq ft*	*1,200-2,500 sq ft*
Household size/ Building occupancy	*4*	*4-6*
Primary use of residence/building	*Primary residence*	*Primary residence*
Equity-eligible building? (Y/N)	*Yes*	*Yes*
Pre-upgrade Information and Building Characteristics	**Prior Installation**	**Pilot Initiative**
What was installed prior to the retrofit/ what is getting replaced?	*Furnace and central air conditioner*	*Furnace, boilers, and air conditioners-central and window units*
Building HVAC distribution system type (ducted, central, distributed, etc.)	*Central ducted HVAC*	*Central ducted HVAC or radiant baseboard*

Pre-retrofit fuel source	*Natural gas, electricity*	*Natural gas, electricity*
Energy-related pre-retrofit upgrades needed (e.g. health and safety measures, panel upgrade, weatherization, etc.)	*None*	*Potential panel upgrades*
Equipment installation location / constraints (e.g. in-unit, closet, mechanical room, etc.)	*Mechanical room in basement, outdoor unit side of home*	*Mechanical rooms, side of homes for outdoor units*
Condition of the equipment location (e.g. conditioned, unconditioned, semi-conditioned space), indoor and/or outdoor units.	*Semi-conditioned indoor space/exposed outdoor unit*	*Anticipating semi- and conditioned mechanical rooms and exposed outdoor units.*
Was cooling provided prior to the upgrade?	*Yes*	*NA*
Was advanced metering or smart thermostat control available pre-upgrade?	*No*	*NA*
Rough size of the area/room/closet where indoor equipment is/will be installed	*100 sq ft*	*100-150 sq ft*
Design Considerations	**Prior Installation**	**Pilot Initiative**
Did/will the system include back up/dual fuel?	*Yes*	*Yes*
If so, was/will the backup fuel system (be) new or existing?	*New*	*NA*
Was/is the equipment intended to provide all heating for the home/unit/building or partial? What are the expected scenarios for the pilot initiative?	*No. In weather below 20 degrees Fahrenheit, backup system heats the home.*	*Systems will supply a majority of the annual heat but have gas backup for cold days.*
Was/is the new equipment intended to provide all space cooling for the home/unit/building or partial? What are the expected scenarios for the pilot initiative?	*Yes*	*Yes*
What load calculations were/will be done (e.g. heating, cooling and latent loads) in the tech demo and pilot initiative?	*Manual J*	*Manual J*
How was/will humidity be monitored and managed?	*Not monitored*	*Not monitored*
How was/ will noise level be monitored and managed?	*It was monitored with a decibel meter. Occupant noted noise issues, so noise dampening mitigation was installed.*	*Installations will take place in mechanical rooms in basements. Noise mitigation can be offered if anticipated need.*

How was/will air flow be monitored and managed?	*New vent was installed in mechanical room to increase airflow.*	*Vent will be installed in mechanical rooms/closets where needed.*
Describe other design considerations involved with the prior tech demo and considerations you expect to see in the pilot initiative.	*Considered adding a drain to catch condensation, but it was not necessary.*	*Condensation drain will be evaluated on case-by-case basis. Contractors will be trained to evaluate and install.*
Post-Upgrade	**Prior Installation**	**Pilot Initiative**
Equipment/technology type (e.g. air source heat pump, heat pump water heater, etc.)	*Air source heat pump*	*Air source heat pump*
Equipment model name and number	*Fake Model USA*	*Fake Model USA 1, Fake Model USA 2*
Equipment capacity/ tank size /voltage rating (e.g. 120v or 240v Heat Pump Water Heater)	*3 ton*	*2 ton – 3 ton*
Equipment efficiency rating(s) (e.g. Heating Seasonal Performance Factor - HSPF, Seasonal Energy Efficiency Ratio- SEER)	*SEER2 17.5, HSPF 8.1*	*SEER2 15.2-17, HSPF2 7.8-8.1*
Compressor type	*Variable speed*	*Variable speed*
Sound performance (dBA)	*<70 dBA*	*<50 – 70 dBA*
Post-retrofit fuel source	*Electricity*	*Electricity*
Back up fuel type (if applicable)	*Natural gas*	*Natural gas*
List any pre-retrofit upgrades needed (e.g. health / safety measures, panel upgrade, etc.)	*None*	*Potential panel upgrades*
Equipment installation location / constraints (e.g. in-unit, closet, mechanical room, etc.)	*Mechanical room in basement*	*Mechanical room*
Condition of the equipment location (e.g. conditioned, unconditioned, semi-conditioned space)	*Semi-conditioned*	*Anticipating semi- and conditioned mechanical rooms*
Installation challenges and/or adjustments made to alter the location to accommodate the equipment	*Smaller mechanical room without adequate space around the unit, had to install extra ventilation for optimal operation*	*Potential for similar alterations to increase airflow around unit*
Data Collection and Results	**Prior Installation**	**Pilot Initiative**
Data collection timeframe (e.g. period for which the information is relevant)	*Jan 2021-Dec 2021*	*6-month and 1-year post installation*

Data collected/what will be collected through the pilot initiative	*Utility bills, occupant comfort, customer installation experience, tech demo report*	*Occupant comfort, customer installation experience, and energy bill impacts*
Data collection methodology- (e.g. collected through interviews, summarized from tech demo report, etc.)	*Interview with heat pump installer and homeowner/occupant*	*Customer survey sent via mail and email*
Financial Impacts*	**Prior Installation Financials**	**Pilot Initiative Example (estimate based on prior installation savings using current, local costs, rebates, rates)**
Installed cost	*$8,000*	*$9,500*
Incentives, rebates applied	*$2,000*	*$4,500*
Net cost to customer	*$6,000*	*$5,000*
Annual pre-retrofit energy use (e.g. gas, electric, propane, etc.)	*10,310 kWh electricity, 678 therms natural gas (whole home)*	*NA*
Annual post-retrofit energy use (e.g. gas, electric, etc.)	*12,310 kWh, 239 therms annually (whole house)*	*NA*
Energy rates per kWh, therm, etc.	*$0.13/kWh, $0.95/therm*	*$0.15/kWh, $1.14/therm*
First year energy bill impacts (anticipated increase or savings)	*Savings $157.05 annually*	*Savings $200.46 annually*
**Teams can work with TAPs to estimate financials using prior installation information. Financials can be extrapolated based on energy performance and savings from prior installations using current rates, rebates, costs, etc.*		
Summary of Results, Relevance, and Lessons Learned		
Summarize performance results	*The heat pump provided ~85% of the home's heat over the heating season (Oct-Apr), the remainder was provided by the gas furnace. While ASHP could provide heating below 20 degrees Fahrenheit, backup fuel system is more cost effective at colder temperatures. Cooling capacity is greater than the home's need and is not used to its full capacity.*	
Summarize occupant feedback	*Energy bill savings and thermal comfort were as expected. The occupant found the unit to be louder than expected in the winter, which caused them to install a DIY solution to dampen noise from the mechanical room. Lead time on obtaining the equipment was twice as long as anticipated, causing frustration.*	
Identify any other challenges or items your team considered in selecting this tech demo	*Airflow in the maintenance room was a challenge we anticipate we may face in our pilot, so we wanted to*	

	reference this Tech Demo and learn from it. A new vent was put into the mechanical room to increase airflow.
Summarize how the team will mitigate any negative experiences from this technology demonstration in the pilot initiative	*Supply chain issues are resolved since 2021 and our team has checked with local distributors to ensure we have enough equipment for our pilot. Sound dampening material may be installed in some locations where appropriate. Noise will be addressed with contractors as a disclosure measure with potential subscribers. Backup systems will be set to provide heating below 20 degrees Fahrenheit. We anticipate that additional venting may be needed in smaller spaces to increase airflow around the unit and have cost information from the Tech Demo about that upgrade measure.*
Team summary of Tech Demo results and relevance to their pilot initiative	*The customer reported their ASHP performed as expected in the first year of operation in a relevant scenario to what we will implement in our Pilot Initiative. We will offer similar models with similar capacities and efficiency ratings to the Tech Demo and expect to install ASHPs in homes with similar characteristics. Therefore, we believe this prior Tech Demo adequately demonstrates our pilot offerings are appropriate for our pilot initiative climate zone and building type.*

INSTALLATION #2

Prior Installation Overview	Prior Installation	Pilot Initiative
Description: *Describe the space and/or water heating and/or cooling loads and proportion of those loads that the heat pump and/or heat pump water heater is expected to serve. Indicate what proportion of this service a backup fuel system is expected to provide (if applicable) and identify whether the backup system is an existing or new system. Include any other information your team deems important to explain the context of this technology demonstration.*		
Location (zip code)	*80401*	*80401, 80402, 80405, 80410*
Year of Installation	*2021*	*2024-2026*
Climate zone	*6a*	*6a*
Utility service provider	*Xcel Energy*	*Xcel Energy*
Building type	*Single family detached*	*Single family detached*
Building size	*1,500 sq ft*	*1,200-2,500 sq ft*
Household size/ Building occupancy	*4*	*4-6*
Primary use of residence/building	*Primary residence*	*Primary residence*
Equity-eligible building? (Y/N)	*Yes*	*Yes*

Buildings UP

Pre-upgrade Information and Building Characteristics	Prior Installation	Pilot Initiative
What was installed prior to the retrofit/ what is getting replaced?	*Furnace and central air conditioner*	*Furnace, boilers, and air conditioners-central and window units*
Building HVAC distribution system type (ducted, central, distributed, etc.)	*Central ducted HVAC*	*Central ducted HVAC or radiant baseboard*
Pre-retrofit fuel source	*Natural gas, electricity*	*Natural gas, electricity*
Energy-related pre-retrofit upgrades needed (e.g. health and safety measures, panel upgrade, weatherization, etc.)	*None*	*Potential panel upgrades*
Equipment installation location / constraints (e.g. in-unit, closet, mechanical room, etc.)	*Mechanical room in basement, outdoor unit side of home*	*Mechanical rooms, side of homes for outdoor units*
Condition of the equipment location (e.g. conditioned, unconditioned, semi-conditioned space), indoor and/or outdoor units.	*Semi-conditioned indoor space/exposed outdoor unit*	*Anticipating semi- and conditioned mechanical rooms and exposed outdoor units.*
Was cooling provided prior to the upgrade?	*Yes*	*NA*
Was advanced metering or smart thermostat control available pre-upgrade?	*No*	*NA*
Rough size of the area/room/closet where indoor equipment is/will be installed	*100 sq ft*	*100-150 sq ft*
Design Considerations	**Prior Installation**	**Pilot Initiative**
Did/will the system include back up/dual fuel?	*Yes*	*Yes*
If so, was/will the backup fuel system (be) new or existing?	*New*	*NA*
Was/is the equipment intended to provide all heating for the home/unit/building or partial? What are the expected scenarios for the pilot initiative?	*No. In weather below 20 degrees Fahrenheit, backup system heats the home.*	*Systems will supply a majority of the annual heat but have gas backup for cold days.*
Was/is the new equipment intended to provide all space cooling for the home/unit/building or partial? What are the expected scenarios for the pilot initiative?	*Yes*	*Yes*
What load calculations were/will be done (e.g. heating, cooling and latent loads) in the tech demo and pilot initiative?	*Manual J*	*Manual J*

How was/will humidity be monitored and managed?	*Not monitored*	*Not monitored*
How was/ will noise level be monitored and managed?	*It was monitored with a decibel meter. Occupant noted noise issues, so noise dampening mitigation was installed.*	*Installations will take place in mechanical rooms in basements. Noise mitigation can be offered if anticipated need.*
How was/will air flow be monitored and managed?	*New vent was installed in mechanical room to increase airflow.*	*Vent will be installed in mechanical rooms/closets where needed.*
Describe other design considerations involved with the prior tech demo and considerations you expect to see in the pilot initiative.	*Considered adding a drain to catch condensation, but it was not necessary.*	*Condensation drain will be evaluated on case-by-case basis. Contractors will be trained to evaluate and install.*
Post-Upgrade	**Prior Installation**	**Pilot Initiative**
Equipment/technology type (e.g. air source heat pump, heat pump water heater, etc.)	*Air source heat pump*	*Air source heat pump*
Equipment model name and number	*Fake Model USA*	*Fake Model USA 1, Fake Model USA 2*
Equipment capacity/ tank size /voltage rating (e.g. 120v or 240v Heat Pump Water Heater)	*3 ton*	*2 ton – 3 ton*
Equipment efficiency rating(s) (e.g. Heating Seasonal Performance Factor - HSPF, Seasonal Energy Efficiency Ratio- SEER)	*SEER2 17.5, HSPF 8.1*	*SEER2 15.2-17, HSPF2 7.8-8.1*
Compressor type	*Variable speed*	*Variable speed*
Sound performance (dBA)	*<70 dBA*	*<50 – 70 dBA*
Post-retrofit fuel source	*Electricity*	*Electricity*
Back up fuel type (if applicable)	*Natural gas*	*Natural gas*
List any pre-retrofit upgrades needed (e.g. health / safety measures, panel upgrade, etc.)	*None*	*Potential panel upgrades*
Equipment installation location / constraints (e.g. in-unit, closet, mechanical room, etc.)	*Mechanical room in basement*	*Mechanical room*
Condition of the equipment location (e.g. conditioned, unconditioned, semi-conditioned space)	*Semi-conditioned*	*Anticipating semi- and conditioned mechanical rooms*

Installation challenges and/or adjustments made to alter the location to accommodate the equipment	*Smaller mechanical room without adequate space around the unit, had to install extra ventilation for optimal operation*	*Potential for similar alterations to increase airflow around unit*
Data Collection and Results	**Prior Installation**	**Pilot Initiative**
Data collection timeframe (e.g. period for which the information is relevant)	*Jan 2021-Dec 2021*	*6-month and 1-year post installation*
Data collected/what will be collected through the pilot initiative	*Utility bills, occupant comfort, customer installation experience, tech demo report*	*Occupant comfort, customer installation experience, and energy bill impacts*
Data collection methodology- (e.g. collected through interviews, summarized from tech demo report, etc.)	*Interview with heat pump installer and homeowner/occupant*	*Customer survey sent via mail and email*
Financial Impacts*	**Prior Installation Financials**	**Pilot Initiative Example (estimate based on prior installation savings using current, local costs, rebates, rates)**
Installed cost	*$8,000*	*$9,500*
Incentives, rebates applied	*$2,000*	*$4,500*
Net cost to customer	*$6,000*	*$5,000*
Annual pre-retrofit energy use (e.g. gas, electric, propane, etc.)	*10,310 kWh electricity, 678 therms natural gas (whole home)*	*NA*
Annual post-retrofit energy use (e.g. gas, electric, etc.)	*12,310 kWh, 239 therms annually (whole house)*	*NA*
Energy rates per kWh, therm, etc.	*$0.13/kWh, $0.95/therm*	*$0.15/kWh, $1.14/therm*
First year energy bill impacts (anticipated increase or savings)	*Savings $157.05 annually*	*Savings $200.46 annually*
**Teams can work with TAPs to estimate financials using prior installation information. Financials can be extrapolated based on energy performance and savings from prior installations using current rates, rebates, costs, etc.*		
Summary of Results, Relevance, and Lessons Learned		
Summarize performance results	*The heat pump provided ~85% of the home's heat over the heating season (Oct-Apr), the remainder was provided by the gas furnace. While ASHP could provide heating below 20 degrees Fahrenheit, backup fuel system is more cost effective at colder temperatures. Cooling capacity is greater than the home's need and is not used to its full capacity.*	

Summarize occupant feedback	*Energy bill savings and thermal comfort were as expected. The occupant found the unit to be louder than expected in the winter, which caused them to install a DIY solution to dampen noise from the mechanical room. Lead time on obtaining the equipment was twice as long as anticipated, causing frustration.*
Identify any other challenges or items your team considered in selecting this tech demo	*Airflow in the maintenance room was a challenge we anticipate we may face in our pilot, so we wanted to reference this Tech Demo and learn from it. A new vent was put into the mechanical room to increase airflow.*
Summarize how the team will mitigate any negative experiences from this technology demonstration in the pilot initiative	*Supply chain issues are resolved since 2021 and our team has checked with local distributors to ensure we have enough equipment for our pilot. Sound dampening material may be installed in some locations where appropriate. Noise will be addressed with contractors as a disclosure measure with potential subscribers. Backup systems will be set to provide heating below 20 degrees Fahrenheit. We anticipate that additional venting may be needed in smaller spaces to increase airflow around the unit and have cost information from the Tech Demo about that upgrade measure.*
Team summary of Tech Demo results and relevance to their pilot initiative	*The customer reported their ASHP performed as expected in the first year of operation in a relevant scenario to what we will implement in our Pilot Initiative. We will offer similar models with similar capacities and efficiency ratings to the Tech Demo and expect to install ASHPs in homes with similar characteristics. Therefore, we believe this prior Tech Demo adequately demonstrates our pilot offerings are appropriate for our pilot initiative climate zone and building type.*

INSTALLATION #3

Prior Installation Overview	Prior Installation	Pilot Initiative
Description: *Describe the space and/or water heating and/or cooling loads and proportion of those loads that the heat pump and/or heat pump water heater is expected to serve. Indicate what proportion of this service a backup fuel system is expected to provide (if applicable) and identify whether the backup system is an existing or new system. Include any other information your team deems important to explain the context of this technology demonstration.*		
Location (zip code)	*80401*	*80401, 80402, 80405, 80410*
Year of Installation	*2021*	*2024-2026*
Climate zone	*6a*	*6a*
Utility service provider	*Xcel Energy*	*Xcel Energy*
Building type	*Single family detached*	*Single family detached*

Buildings UP

Building size	*1,500 sq ft*	*1,200-2,500 sq ft*
Household size/ Building occupancy	*4*	*4-6*
Primary use of residence/building	*Primary residence*	*Primary residence*
Equity-eligible building? (Y/N)	*Yes*	*Yes*
Pre-upgrade Information and Building Characteristics	**Prior Installation**	**Pilot Initiative**
What was installed prior to the retrofit/ what is getting replaced?	*Furnace and central air conditioner*	*Furnace, boilers, and air conditioners-central and window units*
Building HVAC distribution system type (ducted, central, distributed, etc.)	*Central ducted HVAC*	*Central ducted HVAC or radiant baseboard*
Pre-retrofit fuel source	*Natural gas, electricity*	*Natural gas, electricity*
Energy-related pre-retrofit upgrades needed (e.g. health and safety measures, panel upgrade, weatherization, etc.)	*None*	*Potential panel upgrades*
Equipment installation location / constraints (e.g. in-unit, closet, mechanical room, etc.)	*Mechanical room in basement, outdoor unit side of home*	*Mechanical rooms, side of homes for outdoor units*
Condition of the equipment location (e.g. conditioned, unconditioned, semi-conditioned space), indoor and/or outdoor units.	*Semi-conditioned indoor space/exposed outdoor unit*	*Anticipating semi- and conditioned mechanical rooms and exposed outdoor units.*
Was cooling provided prior to the upgrade?	*Yes*	*NA*
Was advanced metering or smart thermostat control available pre-upgrade?	*No*	*NA*
Rough size of the area/room/closet where indoor equipment is/will be installed	*100 sq ft*	*100-150 sq ft*
Design Considerations	**Prior Installation**	**Pilot Initiative**
Did/will the system include back up/dual fuel?	*Yes*	*Yes*
If so, was/will the backup fuel system (be) new or existing?	*New*	*NA*
Was/is the equipment intended to provide all heating for the home/unit/building or partial? What are the expected scenarios for the pilot initiative?	*No. In weather below 20 degrees Fahrenheit, backup system heats the home.*	*Systems will supply a majority of the annual heat but have gas backup for cold days.*
Was/is the new equipment intended to provide all space cooling for the home/unit/building or partial? What are	*Yes*	*Yes*

the expected scenarios for the pilot initiative?		
What load calculations were/will be done (e.g. heating, cooling and latent loads) in the tech demo and pilot initiative?	*Manual J*	*Manual J*
How was/will humidity be monitored and managed?	*Not monitored*	*Not monitored*
How was/ will noise level be monitored and managed?	*It was monitored with a decibel meter. Occupant noted noise issues, so noise dampening mitigation was installed.*	*Installations will take place in mechanical rooms in basements. Noise mitigation can be offered if anticipated need.*
How was/will air flow be monitored and managed?	*New vent was installed in mechanical room to increase airflow.*	*Vent will be installed in mechanical rooms/closets where needed.*
Describe other design considerations involved with the prior tech demo and considerations you expect to see in the pilot initiative.	*Considered adding a drain to catch condensation, but it was not necessary.*	*Condensation drain will be evaluated on case-by-case basis. Contractors will be trained to evaluate and install.*
Post-Upgrade	**Prior Installation**	**Pilot Initiative**
Equipment/technology type (e.g. air source heat pump, heat pump water heater, etc.)	*Air source heat pump*	*Air source heat pump*
Equipment model name and number	*Fake Model USA*	*Fake Model USA 1, Fake Model USA 2*
Equipment capacity/ tank size /voltage rating (e.g. 120v or 240v Heat Pump Water Heater)	*3 ton*	*2 ton – 3 ton*
Equipment efficiency rating(s) (e.g. Heating Seasonal Performance Factor - HSPF, Seasonal Energy Efficiency Ratio-SEER)	*SEER2 17.5, HSPF 8.1*	*SEER2 15.2-17, HSPF2 7.8-8.1*
Compressor type	*Variable speed*	*Variable speed*
Sound performance (dBA)	*<70 dBA*	*<50 – 70 dBA*
Post-retrofit fuel source	*Electricity*	*Electricity*
Back up fuel type (if applicable)	*Natural gas*	*Natural gas*
List any pre-retrofit upgrades needed (e.g. health / safety measures, panel upgrade, etc.)	*None*	*Potential panel upgrades*

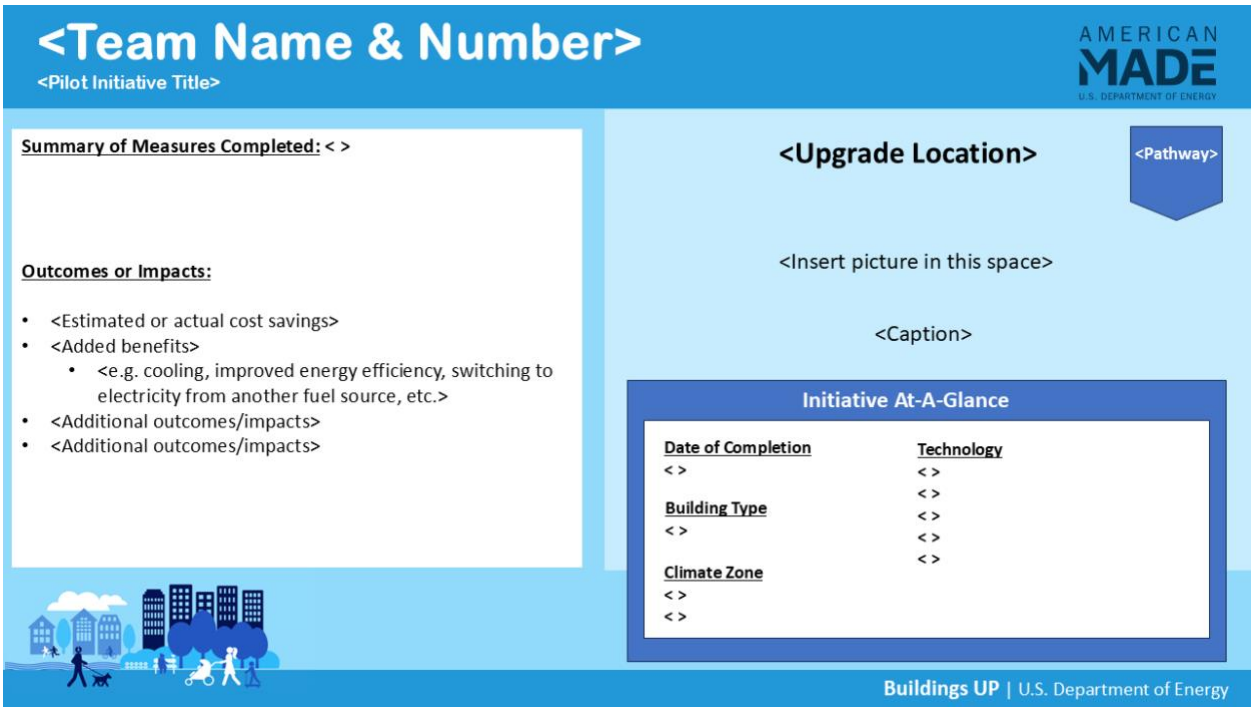
Equipment installation location / constraints (e.g. in-unit, closet, mechanical room, etc.)	*Mechanical room in basement*	*Mechanical room*
Condition of the equipment location (e.g. conditioned, unconditioned, semi-conditioned space)	*Semi-conditioned*	*Anticipating semi- and conditioned mechanical rooms*
Installation challenges and/or adjustments made to alter the location to accommodate the equipment	*Smaller mechanical room without adequate space around the unit, had to install extra ventilation for optimal operation*	*Potential for similar alterations to increase airflow around unit*
Data Collection and Results	**Prior Installation**	**Pilot Initiative**
Data collection timeframe (e.g. period for which the information is relevant)	*Jan 2021-Dec 2021*	*6-month and 1-year post installation*
Data collected/what will be collected through the pilot initiative	*Utility bills, occupant comfort, customer installation experience, tech demo report*	*Occupant comfort, customer installation experience, and energy bill impacts*
Data collection methodology- (e.g. collected through interviews, summarized from tech demo report, etc.)	*Interview with heat pump installer and homeowner/occupant*	*Customer survey sent via mail and email*
Financial Impacts*	**Prior Installation Financials**	**Pilot Initiative Example (estimate based on prior installation savings using current, local costs, rebates, rates)**
Installed cost	*$8,000*	*$9,500*
Incentives, rebates applied	*$2,000*	*$4,500*
Net cost to customer	*$6,000*	*$5,000*
Annual pre-retrofit energy use (e.g. gas, electric, propane, etc.)	*10,310 kWh electricity, 678 therms natural gas (whole home)*	*NA*
Annual post-retrofit energy use (e.g. gas, electric, etc.)	*12,310 kWh, 239 therms annually (whole house)*	*NA*
Energy rates per kWh, therm, etc.	*$0.13/kWh, $0.95/therm*	*$0.15/kWh, $1.14/therm*
First year energy bill impacts (anticipated increase or savings)	*Savings $157.05 annually*	*Savings $200.46 annually*
**Teams can work with TAPs to estimate financials using prior installation information. Financials can be extrapolated based on energy performance and savings from prior installations using current rates, rebates, costs, etc.*		
Summary of Results, Relevance, and Lessons Learned		

Summarize performance results	*The heat pump provided ~85% of the home's heat over the heating season (Oct-Apr), the remainder was provided by the gas furnace. While ASHP could provide heating below 20 degrees Fahrenheit, backup fuel system is more cost effective at colder temperatures. Cooling capacity is greater than the home's need and is not used to its full capacity.*
Summarize occupant feedback	*Energy bill savings and thermal comfort were as expected. The occupant found the unit to be louder than expected in the winter, which caused them to install a DIY solution to dampen noise from the mechanical room. Lead time on obtaining the equipment was twice as long as anticipated, causing frustration.*
Identify any other challenges or items your team considered in selecting this tech demo	*Airflow in the maintenance room was a challenge we anticipate we may face in our pilot, so we wanted to reference this Tech Demo and learn from it. A new vent was put into the mechanical room to increase airflow.*
Summarize how the team will mitigate any negative experiences from this technology demonstration in the pilot initiative	*Supply chain issues are resolved since 2021 and our team has checked with local distributors to ensure we have enough equipment for our pilot. Sound dampening material may be installed in some locations where appropriate. Noise will be addressed with contractors as a disclosure measure with potential subscribers. Backup systems will be set to provide heating below 20 degrees Fahrenheit. We anticipate that additional venting may be needed in smaller spaces to increase airflow around the unit and have cost information from the Tech Demo about that upgrade measure.*
Team summary of Tech Demo results and relevance to their pilot initiative	*The customer reported their ASHP performed as expected in the first year of operation in a relevant scenario to what we will implement in our Pilot Initiative. We will offer similar models with similar capacities and efficiency ratings to the Tech Demo and expect to install ASHPs in homes with similar characteristics. Therefore, we believe this prior Tech Demo adequately demonstrates our pilot offerings are appropriate for our pilot initiative climate zone and building type.*

4.1.3. Building Upgrade Showcase Slide Template

Templates are provided for the administrative convenience of the teams. Teams are not required to use the Showcase Slide template, but they must include all the information outlined in the template.

- Building Upgrade Showcase Slide Template: https://www.herox.com/BuildingsUP/resource/2092



4.2. National Environmental Policy Act (Compliance and Submission Forms)

This prize is subject to the National Environmental Policy Act (NEPA) (42 U.S.C. § 4321, et seq.). NEPA requires federal agencies to integrate environmental values into their decision-making processes by considering the potential environmental impacts of their proposed actions. For additional background on NEPA, please see DOE's NEPA website at http://nepa.energy.gov/.

Upgrades proposed in buildings that may be eligible for the National Register of Historic Places under the National Historic Preservation Act will require additional evaluation, which may add 60 days (or more) to the review period.

National Register of Historic Places eligibility evaluations are based on the quality of significance in American history, architecture, archaeology, engineering, and culture present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and have any of these characteristics:

- Are associated with events that have made a significant contribution to the broad patterns of our history
- Are associated with the lives of significant persons in the past
- Embody the distinctive characteristics of a type, period, or method of construction; or

that represent the work of a master; or that possess high artistic values; or that represent a significant and distinguishable entity whose components may lack individual distinction; or have yielded or may be likely to yield information important in history or prehistory.[8]

DOE previously completed two NEPA determinations for this prize (GFO-National Building Upgrade Prize-001; A9, 11/23/2022; and GFO-National Building Upgrade Prize-002, A9; 06/12/2023). Those NEPA determinations covered the development of concept plans (Phase 1s and Phase 1) and the further development of concept and implementation plans (Phase 2) of the prize. A third NEPA determination covers activities in Phase 3. Future phases of the prize would be dependent on the outcome of Phase 3 and would require additional NEPA review. Exact language for this determination is provided in Section 4.2.1.

4.2.1. NEPA Determination for Phase 3

Phase 3 of the prize competition would support the implementation of technology demonstrations and pilot initiatives defined in Phase 2. Implementation would include fieldwork and the installation of technologies in select structures. DOE has determined that the following activities 1 through 7 would qualify for the Standard Upgrade Phase 3 NEPA determination.

1. Administrative activities
2. Energy audits
3. Development and implementation of programs, plans, and strategies to encourage energy efficiency and renewable energy, such as policy development and stakeholder engagement
4. Development and implementation of classroom or online training programs
5. Development and implementation of building codes, including inspection services and associated activities, to support code compliance and promote building energy efficiency
6. New installation of non-hardwired devices, including photo controls, occupancy sensors, carbon dioxide, thermostats, humidity, light meters, and other building control sensors, provided that the work conforms with applicable state and local permitting requirements
7. Installation of EVSE, including testing measures to assess the safety and functionality of the EVSE, restricted to the existing footprints and levels of previous ground disturbance, within an existing parking facility, defined as any building, structure, land, right-of-way, facility, or area used for motor vehicle parking. All activities must use reversible, nonpermanent techniques for installation, where appropriate; use the lowest profile EVSE reasonably available that provides the necessary charging capacity; place the EVSE in a minimally visibly intrusive area; use colors complementary to the surrounding environment, where possible; and are limited to the current electrical capacity. That applies to Level 1, Level 2, or Level 3 (also known as DC fast-charging) EVSE. (Not applicable to Tribal lands.)

Activities 8 through 24 qualify for the Standard Upgrade Phase 3 NEPA determination provided that the work does not affect the character-defining features of the building and would not require structural reinforcement:

8. Replacement of existing lighting with energy-efficient lighting provided that such work does not

[8] U.S. Department of the Interior National Park Service. 1995. "National Register Bulletin: How to Apply the National Register Criteria for Evaluation." https://www.nps.gov/subjects/nationalregister/upload/NRB-15_web508.pdf.

affect the character-defining features of the building

9. Installation of building insulation (not including spray insulation)
10. Installation of insulation on ducts, water heater tanks, and heating pipes
11. Duct sealing, insulation, repair, or replacement in unoccupied areas
12. External weather sealing of the building shell, including caulking, weather stripping, and other air infiltration control measures on windows and doors; and installing thresholds in a manner that does not harm or obscure historic windows, trim, or character-defining features of the building
13. Interior weather sealing, including using weather stripping, door sweeps, and caulk and sealing major air leaks associated with bypasses, ducts, air conditioning units, etc.
14. Purchase and installation of energy-efficient or energy- and water-efficient home and commercial appliances and equipment (including, but not limited to, energy or water-monitoring and control systems, thermostats, furnaces, and air conditioners)
15. Retrofit of energy-efficient pumps and motors
16. Plumbing work, including installation and replacement of water heaters
17. Furnace or hot water tank replacement that does not require a visible new supply or venting
18. Replacement and upgrades of existing HVAC equipment, including pumps, motors, boilers, chillers, cooling towers, air handling units, package units, condensers, compressors, or heat exchangers that do not require a new location and are not visible from any public right-of-way, provided that such work does not affect the character-defining features of the building
19. Cleaning, tuning, repair, or replacement of heating systems, including furnaces, boilers, heat pumps, vented space heaters, and woodstoves
20. Cleaning, tuning, repair, or replacement of cooling systems, including central air conditioners, window air conditioners, heat pumps, and evaporative coolers
21. Conducting other efficiency improvements on heating and cooling systems, including replacing standing pilot lights with electronic ignition devices and installing vent dampers
22. Modifying duct and pipe systems so that heating and cooling systems operate efficiently and effectively, including adding return ducts, replacing diffusers and registers, replacing air filters, and installing thermostatic radiator controls on steam and hot water heating systems
23. Installation of programmable thermostats, outdoor reset controls, UL-listed energy management systems or building automation systems, and other HVAC control systems
24. Adding or replacing existing building control systems, including HVAC control systems and replacing building-wide pneumatic controls with digital controls, thermostats, dampers, and other individual sensors, such as smoke detectors and carbon monoxide detectors (wired or non-wired).

Activities 25 through 33 qualify for the Standard Upgrade Phase 3 NEPA determination provided that all of the following conditions are met:

- Activities would not be located on Tribal lands or within Tribal properties.

- Activities would not be installed in a historic or potentially historic building (any building 45 years or older).
- Activities would not occur within a historic district.
- Activities would not require structural reinforcement.
- Activities would not require trees to be trimmed or removed.
- Any ground-disturbing activities would be confined to the boundaries of an existing facility (defined as an already disturbed area because of regular ground maintenance) and are limited to the following activities:

25. Retrofit and replacement of windows and doors
26. Installation of battery energy storage systems (not to exceed 1,000-kWh capacity)
27. Installation of waste heat recovery devices, including desuperheater water heaters, condensing heat exchangers, heat pumps and water heating heat recovery systems, and other energy recovery equipment
28. Installation of Combined Heat and Power Systems (systems sized appropriately for the buildings in which they are located, not to exceed peak electrical production at 300 kW)
29. Installation of solar electricity (photovoltaic) systems (not to exceed 60 kW)
30. Installation of a wind turbine (20 kW or smaller)
31. Installation of solar thermal systems, including solar thermal hot water (systems must be 200,000 BTU per hour or smaller)
32. Installation of ground source heat pumps (5.5 tons of capacity or smaller horizontal or vertical, ground, closed-loop systems)
33. Installation of biomass thermal systems (3 MMBTUs per hour or smaller systems with appropriate Best Available Control Technologies installed and operated and required permits obtained).

To facilitate a review of a standard upgrade, the teams should fill out the NEPA worksheet at https://app.box.com/s/l1hlifxagn5tuim5uonsjggxohu7vr39 and send it to their regional navigator to facilitate a NEPA review. Once approved, DOE will send an approval email to the team with the NEPA determination number for the portfolio of buildings included on the worksheet.

If the proposed activities are not identified in the lists above and do not meet all the conditions of applicability, the team must submit an individual EQ1 (found at https://www.eere-pmc.energy.gov/NEPA.aspx) for each project. Refer to the Buildings UP NEPA Guide on the Community Site for step-by-step instructions to submit the form.

Submit the EQ1 form directly to DOE through the Project Management Center. Create an account at https://www.eere-pmc.energy.gov/PMCRecipient/.

4.3. Glossary of Terms

Building upgrade zone: The geographic area(s) and building type(s) identified for the pilot and full-scale implementation of your building upgrade initiative. That may be an entire community, neighborhoods within a community, a utility service area, a portfolio of geographically dispersed buildings, or another

zone that you define.

Community-Based Organization (CBO): For this prize, DOE defines CBOs as "nonprofit organizations that are representative of a community or segments of a community, defined by place or population, and provide financial, educational, cultural, and/or other resources aimed at enhancing health, wealth, and overall community well-being." For-profit entities and large nonprofits with a particular focus area beyond the local level are typically excluded from this definition. Ideally, CBOs are physically based in the communities they serve, though in some cases CBOs can be effective even without a physical presence. CBOs range from formal organizations with legal nonprofit status (501(c)(3), 501(c)(4), etc.) to informal, grassroots community groups that are mission-driven and headed by respected community leaders.

Community engagement: Activities designed to reach specified communities, such as those that may be impacted by building upgrades, and applicable communities that have been historically marginalized from decision-making or have experienced disproportionately high burdens and low benefits from previous policies and programs.

Critical Success Factor: The necessary elements that form a strong foundation for a pilot and full-scale building upgrade initiative, as specified in the Prize Rules.

Debt-based financing: Any financing program where the consumer takes on debt for the upgrade (e.g., a loan). For this prize, pay-as-you-save programs are **not** considered debt-based financing.

Designated prize recipient: A legally organized entity identified by the competitor to receive prize cash awards.

Debt-based financing: Any financing program where the consumer takes on debt for the upgrade (e.g., a loan). For this prize, pay-as-you-save programs are **not** considered debt-based financing.

Energy-related health and safety measures: Activities that are necessary before, or as a result of, the installation of energy conservation measures to mitigate or eliminate health and safety hazards. Energy-related health and safety measures include, but are not limited to, combustion appliance safety testing; electrical repair (ensuring code compliance when insulating knob-and-tube wiring and repairing overloaded electrical circuits); assessment of fire hazards (identifying inadequate combustion appliance clearances and creosote buildup); maintaining or improving indoor air quality; lead-safe weatherization or envelope improvements (limited to procedures for installing weatherization measures or envelope improvements without increasing the existing risk of exposure to lead; does not include lead abatement); and procedures to identify preexisting health conditions in homes and buildings, address these problems, and ensure that weatherization or envelope improvements do not exacerbate existing problems.

Homes occupied by low-income households: Households whose total income falls below a certain threshold. These homes can include all housing types, including single-family, multifamily, and manufactured housing. For this prize, teams may use the Weatherization Assistance Program eligibility definition of low income, which is 200% of the poverty level or 60% of the state median income. Teams may also choose to use the definition of 80% of area median income, the income level that qualifies households for full low-income rebates through the Inflation Reduction Act of 2022 HOMES Rebate program.

Indian Tribes. For the purposes of this prize, the term "Indian Tribe" includes both federally recognized and non-federally recognized (e.g., state-recognized) Indian Tribes.

Lead organization or team lead: The organization leading the team and submitting the application in HeroX. The lead organization or team lead provides a main point of contact for the team throughout the prize.

Meaningful engagement: Activities that are designed to be accessible and inviting for participants, such as hosting interactive workshops; attending and participating in existing community forums hosted by trusted community leaders or organizations; codesigning initiative plans with agreed-upon decision-making power, facilitation, and/or additional CBO planning partners invited by a team's leading CBO; creating a community advisory board or oversight committee; participatory budgeting; and/or entering into a memorandum of understanding, community benefits agreement, project labor agreement, or community workforce agreement. At a minimum, meaningful engagement ensures that community and/or stakeholder needs and assets are being integrated into the initiative and informing planning.

Naturally occurring affordable rental housing: Nonsubsidized housing that provides affordable rents for households at the 80% level of area median income.[9] Teams can consider any multifamily building located in a U.S. Department of Housing and Urban Development (HUD)-designated low-income housing tax credit "qualified census tract" as meeting these criteria.[10]

Nonfederal government entities: Include municipalities, states, counties, Tribal governments, territories, public housing authorities, and/or regional planning organizations.

Partner: An organization that supports a competitor's initiative in some way but is not formally part of the competing team.

Regional navigators: A group of organizations subcontracted by the National Renewable Energy Laboratory (NREL) to support teams in a geographic region. Regional navigators have broad energy efficiency expertise and relevant relationships to support teams. Regional navigators cannot serve as team members or partners. Regional navigators may be referred to as power connectors within the American-Made Challenges Network.

Registered competitor: The entity registered on HeroX as a competitor.

Subscriber: A person or entity that agrees to receive building upgrades through a Buildings UP initiative. May include property owners and/or renters or tenants. Subscribers must have a legal relationship with the property.

Stakeholder engagement: Activities focusing on engaging with people or organizations that have historically been recognized as having a direct stake in an initiative and its effects and with stakeholders from other sectors that could be strong contributors to the initiative (e.g., health or housing organizations, business improvement districts, neighborhood organizations).

Underserved commercial, nonprofit, and public buildings: Includes many organizations and building types that provide vital services to communities and can experience high energy and building maintenance costs. Examples are provided in Appendix 5.6.

Subsidized affordable housing: Includes public housing, Project-Based Section 8 housing, housing subsidized by the Low-Income Housing Tax Credit, rural housing subsidized by U.S. Department of Agriculture programs, and affordable housing subsidized by other federal, state, or local funding.

Team member: An entity or organization that is formally participating on a competing team and is listed as a team member on the application (e.g., team members are part of the decision-making process and/or receiving funding to help administer the initiative).

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[9] HUD defines affordable housing as "housing on which the occupant is paying no more than 30 percent of gross income for housing costs, including utilities." See https://archives.hud.gov/local/nv/goodstories/2006-04-06glos.cfm.

[10] HUD-designated qualified census tracts for the low-income housing tax credit must have 50% of households with incomes below 60% of the area median gross income or have a poverty rate of 25% or more. Data on qualified census tracts are available at https://www.huduser.gov/portal/datasets/qct.html.

TA providers (TAPs): A group of organizations subcontracted by NREL to support teams in specific areas, including finance and funding, supply chain and workforce development, building stock analysis, technology selection, and building upgrade initiative development and support. TA providers may be referred to as Power Connectors within the American-Made Challenges Network.

5. Background

5.1. Role of Building Upgrades in Meeting National Greenhouse Gas Emissions Reduction Goals

The U.S. building stock—consisting of more than 123 million homes and 5.9 million commercial buildings—consumes 75% of the nation's electricity and 40% of the nation's total energy, and it accounts for 35% of the country's carbon dioxide emissions. Within commercial and residential buildings, HVAC and water heating account for more than 60% of energy use. To meet the Harris-Biden Administration's ambitious greenhouse gas emissions reduction goals[11] and Justice40 commitments,[12] existing buildings across a wide variety of uses, sizes, vintages, and climates must be rapidly and equitably upgraded. Existing programs have not scaled sufficiently to reach all parts of the country, particularly low- and moderate-income households and disadvantaged businesses. In many parts of the country and in certain applications, upgrades remain complicated, costly, disruptive, and undervalued.

To solve these challenges, DOE seeks to support and recognize energy efficiency and efficient electrification initiative innovations in areas such as project financing, project aggregation, equipment ownership structures, soft cost reduction, workforce training and pathways to high-quality jobs, contractor development, alignment with affordable housing constraints, communications, authentic community engagement, and project delivery.

5.2. Challenges to Building Upgrades

There are multiple persistent barriers to scaling energy efficiency and efficient electrification building upgrades, including:

- Lack of reach of funding and incentive programs to historically underserved households and building owners to provide energy efficiency and weatherization or envelope improvement upgrades, especially for buildings that require energy-related health and safety measures[13] (The Weatherization Assistance Program[14] can only reach about 0.2% of eligible low-income households with weatherization upgrades annually.[15])
- High first costs for labor and equipment compared to conventional equipment[16]
- Lack of contractor familiarity with efficient electrification technologies (such as heat pumps and heat pump water heaters) and integrated building upgrades (such as a package of insulation, air

[11] The White House. 2021. "FACT SHEET: President Biden Sets 2030 Greenhouse Gas Pollution Reduction Target Aimed at Creating Good-Paying Union Jobs and Securing U.S. Leadership on Clean Energy Technologies." April 22, 2021. https://www.whitehouse.gov/briefing-room/statements-releases/2021/04/22/fact-sheet-president-biden-sets-2030-greenhouse-gas-pollution-reduction-target-aimed-at-creating-good-paying-union-jobs-and-securing-u-s-leadership-on-clean-energy-technologies/
[12] The White House. 2022. "Justice40: A Whole-of-Government Initiative." https://www.whitehouse.gov/environmentaljustice/justice40/.
[13] Brown, Marilyn Ann, A. Soni, M. V. Lapsa, and K. Southworth. 2020. *Low-Income Energy Affordability: Conclusions From A Literature Review*. Oak Ridge, TN: Oak Ridge National Laboratory. https://doi.org/10.2172/1607178.
[14] U.S. Department of Energy Office of State and Community Weather Programs. "Weatherization Assistance Program." https://www.energy.gov/scep/wap/weatherization-assistance-program.
[15] Drehobl, Ariel. 2020. "Weatherization Cuts Bills and Creates Jobs but Serves Only a Tiny Share of Low-Income Homes." ACEEE. July 7, 2020. https://www.aceee.org/blog-post/2020/07/weatherization-cuts-bills-and-creates-jobs-serves-only-tiny-share-low-income.
[16] Joe, Jaewan, Mini Malhotra, Melissa Voss Lapsa, and Van Baxter. 2021. "U.S. Heat Pump Market Overview – 2020." Presented at the 13th IEA Heat Pump Conference, Jeju, South Korea, April 26–29, 2021. https://www.osti.gov/servlets/purl/1885402.

sealing, and HVAC upgrades)

- Lack of retrofit materials and components[17]
- Limited short-term financial payback[18]
- Insufficient numbers of skilled workers to design, finance, install, and maintain retrofits
- Lack of coordination among local stakeholders, such as those across the energy, housing, government, and banking sectors[19]
- Inconsistent quality of work and consumer mistrust.[20]

5.3. Potential Solutions for Scaling Building Upgrades

Buildings UP aims to reward teams for developing innovative approaches that address barriers to building upgrades, including, but not limited to:

- Innovative funding combinations and financing to reduce the upfront costs of equipment and installation, such as leveraging multiple sources of funding (e.g., combining federal rebates, state and local funding sources, and philanthropic funds to reduce the direct cost of upgrades to homeowners) and addressing prerequisite energy-related health and safety measures
- Scalable and replicable initiative models that streamline the implementation of energy efficiency and efficient electrification upgrades (e.g., streamlined audits, permitting, contractor engagement, and installation)
- Attractive business models that incentivize manufacturers and contractors to produce and install heat pumps, insulation, and other products that enable energy efficiency and efficient electrification upgrades
- Marketing and quantification of additional benefits for building owners and tenants, such as from comfort and indoor air quality improvements, to incentivize greater uptake of retrofit measures
- Promotion of energy efficiency and efficient electrification solutions among a broader range of stakeholders through robust stakeholder engagement, communications campaigns, setting public goals, and promoting initiative successes
- High-quality installations and upgrades for optimal performance through streamlined quality assurance, quality control, and workforce training support.

5.4. Prize Goals

Buildings UP aims to reward innovative initiatives that address persistent administrative, financial, social, and other barriers to improving building energy efficiency and reducing on-site emissions. Although no single team is likely to address all barriers alone, the portfolio of solutions developed collectively by the

[17] International Energy Agency (IEA). 2022. *The Future of Heat Pumps*. Paris. License: CC BY 4.0. https://www.iea.org/reports/the-future-of-heat-pumps.
[18] Amann, J., R. Srivastava, and N. Henner. 2021. *Pathways for Deep Energy Use Reductions and Decarbonization in Homes*. Washington, D.C.: ACEEE. https://www.aceee.org/sites/default/files/pdfs/b2103.pdf.
[19] Amann, J., R. Srivastava, and N. Henner. 2021. *Pathways for Deep Energy Use Reductions and Decarbonization in Homes*. Washington, D.C.: ACEEE. https://www.aceee.org/sites/default/files/pdfs/b2103.pdf.
[20] Satchwell, A., M. A. Piette, and A. Khandekar. 2021. *A National Roadmap for Grid-Interactive Efficient Buildings*. Berkeley, CA: Lawrence Berkeley National Laboratory. https://escholarship.org/content/qt78k303s5/qt78k303s5.pdf.

winning teams contributes to achieving the prize goals.

Specifically, DOE seeks to support solutions that:

- Accelerate building upgrades for energy efficiency and on-site emissions reductions. Winning concepts will advance significant innovations for rapidly increasing retrofits beyond the current best practices in the applicant's identified area of focus.
- Demonstrate scalability and replicability. Winning concepts will have applicability across building type(s), climate zone(s), and/or community type(s).
- Incorporate innovative applications of existing or new approaches to building upgrades.
- Advance holistic and lasting energy efficiency and efficient electrification initiative development (e.g., through supportive infrastructure, financing, and funding) with support from DOE's and NREL's robust technical support network of American-Made Challenges power connectors.
- Benefit underserved communities. The prize is structured to advance the goal of at least 40% of the initiative benefits accruing to equity-eligible buildings (see the glossary and Section 5.5 for further details), their occupants, and surrounding communities. Winning teams (see the glossary and Section 5.7 for details on eligible team members) in the Equity-Centered Innovation Pathway will receive higher prize amounts, which can support deep and intentional engagement with communities being served.

5.5. Eligible Building Types and Upgrades

Buildings intended for upgrades may include one or multiple residential or commercial building types (e.g., single-family; multifamily; manufactured housing; K–12 schools; higher education; commercial real estate; hospitality; health care; retail, food service, and grocery; local government buildings; state government buildings) and may be in a single community or include buildings across multiple geographic locations.

The minimum technologies and strategies that teams must include in every upgrade in their initiative are:

- Efficient electric heating and cooling equipment (e.g., heat pumps and/or heat pump water heaters, geothermal heat pumps)
- Weatherization and envelope improvements (e.g., insulation, air sealing, window improvements) where needed to reduce energy costs.

Additional strategies and technologies that teams may incorporate into their initiatives include, but are not limited to:

- Energy-related health and safety measures
- Efficient electric appliances
- Electric vehicle chargers
- On-site and community solar
- Electric panel upgrades
- Building controls
- Energy storage.

5.6. Equity-Eligible Buildings

Buildings UP is committed to meeting the administration's goal of federal funding supporting broadly shared prosperity across American communities, especially in those in vulnerable or underrepresented communities.

"Underrepresented" refers to populations sharing a particular characteristic, as well as geographic communities, that are shown to have been systematically denied a full opportunity to participate in aspects of economic, social, and civic life, as exemplified by communities that have been denied fair, just, and impartial treatment, which may include women, persons with disabilities, persons who live in rural areas, persons otherwise adversely affected by persistent poverty or inequality, veterans, members of religious minorities, Black, Latino, Indigenous and Native American persons, Asian Americans and Pacific Islanders, other persons of color, and lesbian, gay, bisexual, transgender, and queer (LGBTQ+) persons.

For the purpose of this prize, the following building types are considered "equity-eligible" and will meet the requirements of the Equity-Centered Innovation Pathway:

1. Buildings located within Climate and Environmental Justice Screening Tool-designated[21] and/or DOE-designated[22] Justice40 census tracts, federally recognized Tribal lands, and U.S. territories.

   Teams that use this approach to define their equity-eligible buildings should refer to the specific census tracts they plan to focus on for building upgrades as part of their participation in the prize. Teams should also explain which building types (low-income housing, underserved commercial, schools, etc.) they plan to upgrade within the specific DOE-designated Justice40 census tracts.[23]

2. Affordable housing and housing occupied by low-income residents. Low-income households face a disproportionately higher energy burden, defined as the percentage of gross household income spent on energy costs.[24] According to DOE's Low-Income Energy Affordability Data Tool,[25] the national average energy burden for low-income households is 8.6%, nearly three times higher than for non-low-income households, which is estimated at 3%. The energy burden for low-income households at the local level is estimated to be even higher than 8.6%.

   The following building types fit in this equity-eligible buildings category:

   a. Subsidized affordable housing, such as public housing, Project-Based Section 8 housing, housing subsidized by the Low-Income Housing Tax Credit, rural housing subsidized by

      U.S. Department of Agriculture programs, and affordable housing subsidized by other federal, state, or local funding.

   b. Naturally occurring affordable rental housing, or nonsubsidized housing that provides

[21] More information on the Climate and Economic Justic Screening Tool's (CEJST's) definition of disadvantaged communities is available at https://screeningtool.geoplatform.gov/en/about.

[22] More information on DOE's identification of disadvantaged communities is available at https://energyjustice.egs.anl.gov/ and https://www.energy.gov/diversity/justice40-initiative.

[23] More information on the Justice40 Initiative is available at https://www.whitehouse.gov/environmentaljustice/justice40/ and more information on the OMB interim Justice40 Initiative implementation guidance is available at https://www.whitehouse.gov/wp-content/uploads/2021/07/M-21-28.pdf.

[24] More information on DOE's resources for low-income households is available at https://www.energy.gov/eere/slsc/low-income-community-energy-solutions.

[25] The LEAD Tool is available at https://www.energy.gov/eere/slsc/maps/lead-tool.

affordable rent for households at the 80% level of area median income.[26] Teams can consider any multifamily building located in a U.S. Department of Housing and Urban Development (HUD)-designated low-income housing tax credit "qualified census tract" as meeting these criteria.[27]

c. Homes occupied by low-income households, or households whose total income falls below a certain threshold. These homes can include all housing types, including single-family, multifamily, and manufactured housing. For this prize, teams may use the Weatherization Assistance Program eligibility definition of low income, which is 200% of the poverty level or 60% of state median income. Teams may also choose to use the definition of 80% of area median income, the income level that qualifies households for full low-income rebates through the Inflation Reduction Act of 2022 HOMES Rebate program.

Teams that use this approach to define their equity-eligible buildings should specify which of these affordable and low-income housing options they plan to upgrade and how they will identify the specific housing units for building upgrades during the later stages of the prize. For purposes of this prize, teams can consider an entire multifamily building as an equity-eligible building if greater than 50% of resident households are at 80% or less of area median income.

3. Underserved commercial, nonprofit, and public buildings. The underserved commercial and nonprofit sector includes many organizations and building types that provide vital services to communities and can experience high energy and building maintenance costs. These high costs can inhibit wealth-building and economic development on the commercial side and direct crucial resources away from services to the community on the nonprofit side. The following building types provide a framework for possible types of commercial buildings that could fit in this equity- eligible buildings category:

   a. Buildings used by businesses majority owned or controlled by underrepresented persons or groups of underrepresented persons[28]. These businesses can own or lease their operating space.

   b. Buildings used by businesses that serve underrepresented communities, especially businesses whose benefits or service offerings remain within the community.

   c. Title I schools,[29] or schools with high percentages of students qualifying for free and reduced-cost lunch, high percentages of students from low-income families, or that are located in rural or remote areas. Applicants can use this DOE mapping tool to identify Title I schools: https://energyjustice-schools.egs.anl.gov/.

   d. Buildings used by nonprofit organizations[30] that provide localized community services, such as emergency shelters; meal service centers; arts and culture organizations; and

[26] HUD defines affordable housing as "housing on which the occupant is paying no more than 30 percent of gross income for housing costs, including utilities." See https://archives.hud.gov/local/nv/goodstories/2006-04-06glos.cfm.

[27] HUD-designated qualified census tracts for the low-income housing tax credit must have 50% of households with incomes below 60% of the area median gross income or have a poverty rate of 25% or more. Data on qualified census tracts are available at https://www.huduser.gov/portal/datasets/qct.html.

[28] The federal definition of a "small disadvantaged business" is available at https://www.sba.gov/federal-contracting/contracting-assistance-programs/small- disadvantaged-business.

[29] Title I, Part A (Title I) of the Elementary and Secondary Education Act provides financial assistance to local educational agencies and schools with high numbers or high percentages of children from low-income families. More information on the program is available at https://www2.ed.gov/programs/titleiparta/index.html.

[30] A building owned, operated, or leased by an organization that is described in section 501(c)(3) of the Internal Revenue Code of 1986 and exempt from tax under section 501(a) of such Code.

environmental, economic, and housing justice organizations. These nonprofits can own or lease their operating space.

e. Buildings that provide critical community services, such as public community centers, libraries, emergency service providers, and childcare centers.

f. Buildings designated or planned to be designated for use as resilience hubs or disaster shelters. These buildings are community-serving facilities augmented to support residents, coordinate communication, distribute resources, and provide temporary shelter during emergency and disaster relief situations. Resilient hubs aim to provide healthy buildings and energy security through efficient building design and operation, the integration of renewables, and low-carbon backup power (such as batteries).

g. Other commercial or nonprofit buildings are defined as equity-eligible through community input. See details below on how a team can make this determination.

Teams that use this approach to define their equity-eligible buildings should specify which underrepresented commercial, nonprofit, and public building types they plan to focus on and how they will identify the specific buildings or units for building upgrades during later stages of the prize. Buildings UP recognizes that addressing underrepresented commercial, nonprofit, or public buildings is complex. Applicants should use their narratives to describe how upgrading these buildings would benefit the local community.

Locally defined equity-eligible buildings as defined or identified by the local community of the prize applicant team. DOE recognizes that community-based organizations, local governments, community leaders, and other local stakeholders have on-the-ground knowledge of underrepresented communities not necessarily captured by national datasets or the categories above. Additionally, for the purpose of this Prize, buildings on non-federally recognized Tribal lands may also be eligible as locally defined equity-eligible buildings.

Teams that use this approach to define their equity-eligible buildings should specify which criteria they are using to define their equity-eligible buildings, which can come from a team's local knowledge. Teams using this approach should also specify which neighborhoods and/or specific building types they will focus on and how they fit with the overall goals of the Justice40 Initiative. Finally, teams should share how they will approach upgrades for specific buildings during later stages of the prize.

Buildings UP understands that each team's plans for their Equity-Centered Innovation Pathway focus may change as they deepen community engagement and planning efforts. Teams should describe how they plan to reduce the risk of housing or leased space cost increases and/or the displacement of current residents, businesses, and nonprofit organizations through the investments that will be made through their future building upgrades.

5.7. Eligibility and Terms

Buildings UP Phase 3 is open to teams that were previously awarded as Phase 2 winners. Organizations may be a part of multiple submitting teams, and the composition of the team may change during Phase 3.

Phase 3 teams may include nonfederal government entities, Indian Tribes, community-based organizations, and nonprofit and for-profit organizations. See the glossary for definitions of these organizations. To be eligible for this prize, a CBO must have its own nonprofit legal status OR utilize a fiscal sponsor with a nonprofit legal status.

Team members and partners are subject to the following requirements:

- An individual prize competitor (who is not competing as a member of a group) must be a U.S. citizen or permanent resident.
- A group of individuals competing as one team are able to win, provided that the online account holder of the submission is a U.S. citizen or permanent resident. Individuals competing as part of a team may participate if they are legally authorized to work in the United States.
- Private entities must be incorporated in and maintain a primary place of business in the United States.
- Academic institutions must be based in the United States.
- DOE employees, employees of sponsoring organizations, members of their immediate families (e.g., spouses, children, siblings, or parents), and persons living in the same household as such persons, whether or not related, are not eligible to participate in the prize.
- Individuals who worked at DOE (federal employees or support service contractors) within six months prior to the submission deadline of any contest are not eligible to participate in any prize contests in this program.
- Federal entities and federal employees are not eligible to participate in any portion of the prize.
- DOE national laboratory employees cannot compete in the prize.
- TAPs and Regional Navigators are not eligible to participate as team members.
- Entities and individuals publicly banned from doing business with the U.S. government, such as entities and individuals debarred, suspended, or otherwise excluded from or ineligible for participating in federal programs, are not eligible to compete.
- Individuals participating in a foreign government talent recruitment program[31] sponsored by a country of risk[32] and teams that include such individuals are not eligible to compete.
- Entities owned by, controlled by, or subject to the jurisdiction or direction of a government of a country of risk are not eligible to compete.
- To be eligible, an individual authorized to represent the competitor must agree to and sign the following statement upon registration with HeroX:

  > I am providing this submission package as part of my participation in this prize. I understand that the information contained in this submission will be relied on by the federal government to determine whether to issue a prize to the named competitor. I certify under penalty of perjury that the named competitor meets the eligibility requirements for this prize

[31] Foreign Government-Sponsored Talent Recruitment Program is defined as an effort directly or indirectly organized, managed, or funded by a foreign government, or a foreign government instrumentality or entity, to recruit science and technology professionals or students (regardless of citizenship or national origin, or whether having a full-time or part-time position). Some foreign government-sponsored talent recruitment programs operate with the intent to import or otherwise acquire from abroad, sometimes through illicit means, proprietary technology or software, unpublished data and methods, and intellectual property to further the military modernization goals and/or economic goals of a foreign government. Many, but not all, programs aim to incentivize the targeted individual to relocate physically to the foreign state for the above purpose. Some programs allow for or encourage continued employment at United States research facilities or receipt of federal research funds while concurrently working at and/or receiving compensation from a foreign institution, and some direct participants not to disclose their participation to U.S. entities. Compensation could take many forms including cash, research funding, complimentary foreign travel, honorific titles, career advancement opportunities, promised future compensation, or other types of remuneration or consideration, including in-kind compensation.

[32] DOE has designated the following countries as foreign countries of risk: Iran, North Korea, Russia, and China. This list is subject to change.

competition and complies with all other rules contained in the Official Rules document. I further represent that the information contained in the submission is true and contains no misrepresentations. I understand false statements or misrepresentations to the federal government may result in civil and/or criminal penalties under 18 U.S.C. § 1001 and § 287, and 31 U.S.C. §§ 3729-3733 and 3801-3812.

To compete in Phase 3 of Buildings UP, a participating team must continue to comply with the eligibility requirements above. By completing a Phase 3 submission, a team certifies that they follow these eligibility requirements. Eligibility is subject to verification before prizes are awarded. The registered competitor is the participant that registered in HeroX to compete.

Organizations meeting the above eligibility requirements may participate as team members or team leads in Phase 3 whether or not they are legally organized entities; however, prize funds can only be paid to legally organized entities. Winning teams should designate a legally organized entity to serve as the Designated Prize Recipient to receive prize funds.

Smaller organizations (e.g., small local governments or small utilities) may form consortia to participate as a team. Teams that support or administer existing building retrofit initiatives are eligible to apply as long as their Phase 3 submission includes significantly expanding or improving upon an existing initiative or developing a new initiative.

6. Additional Terms and Conditions

6.1. Requirements

Your Buildings UP submission is subject to the following terms and conditions:

- You must post the final content of your Phase 3 submission or upload the submission form on HeroX by 5 p.m. Eastern Time before the prize's Phase 3 submission period closes. Late submissions or any other form of submission may be rejected. Teams may submit up to two times during the submission period. Submissions must be received no later than January 18, 2027, at 5 p.m. Eastern Time.

- All submissions that you wish to protect from public disclosure must be marked according to the instructions in Section 6.10 of this appendix. Unmarked or improperly marked submissions will be deemed to have been provided with unlimited rights and may be used in any manner and for any purpose whatsoever.

- You must include all the required elements in your submission. The Prize Administrator may disqualify your submission after an initial screening if you fail to provide all required submission elements. Teams may be given an opportunity to rectify submission errors due to technical challenges.

- Your submission must be in English and in a format readable by Microsoft Word or Adobe PDF. Scanned hand-written submissions will be disqualified.

- Submissions will be disqualified if they contain any matter that, in the sole discretion of the U.S. Department of Energy (DOE) or the National Renewable Energy Laboratory (NREL), is indecent, obscene, defamatory, libelous, and/or lacking in professionalism, or demonstrates a lack of respect for people or life on this planet.

- If you click "Accept" on the HeroX platform and proceed to register for any of the prizes described in this document, these rules will form a valid and binding agreement between you

and DOE and are in addition to the existing HeroX Terms of Use for all purposes relating to these contests. You should print and keep a copy of these rules. These provisions only apply to the prize described here and no other prize on the HeroX platform or anywhere else.

- The Prize Administrator, when feasible, may give teams an opportunity to fix non-substantive mistakes or errors in their submission packages.
- As part of your submission to this prize, you will be required to sign the following statement:
    - I am providing this submission package as part of my participation in this prize. I understand that the information contained in this submission will be relied on by the federal government to determine whether to issue a prize to the named competitor. I certify under penalty of perjury that the named competitor meets the eligibility requirements for this prize competition and complies with all other rules contained in the Official Rules document. I further represent that the information contained in the submission is true and contains no misrepresentations. I understand false statements or misrepresentations to the federal government may result in civil and/or criminal penalties under 18 U.S.C. § 1001 and § 287, and 31 U.S.C. §§ 3729-3733 and 3801-3812.

6.2. Verification of Payments

The Prize Administrator will verify the identity and role of all teams before distributing any prizes. Receiving a prize payment is contingent upon fulfilling all requirements contained herein. The Prize Administrator will notify winning teams using the provided email contact information for the individual or entity that was responsible for the submission. Each team will be required to sign and return to the Prize Administrator, within 30 days of the date on the notice, a completed NREL Request for ACH Banking Information form and a completed W9 form (https://www.irs.gov/pub/irs-pdf/fw9.pdf). In the sole discretion of the Prize Administrator, a winning team will be disqualified from the competition and receive no prize funds if: (i) the person/entity does not respond to notifications; (ii) the person/entity fails to sign and return the required documentation within the required time period; (iii) the notification is returned as undeliverable; (iv) the submission or person/entity is disqualified for any other reason.

In the event of a dispute as to any registration, the authorized account holder of the email address used to register will be deemed to be the team. The “authorized account holder” is the natural person or legal entity assigned an email address by an Internet access provider, online service provider, or other organization responsible for assigning email addresses for the domain associated with the submitted address. All teams may be required to show proof of being the authorized account holder.

6.3. Teams and Awards

The Prize Administrator will pay the award amount to one designated prize recipient for each winning team in the Open Innovation Pathway, whether consisting of single or multiple entities. Up to two Prize Recipients may be identified for Equity-Centered Innovation Pathway teams. The Prize Administrator will issue the dollar amounts indicated in the Phase 3 submission form to each of the identified Prize Recipients.

It is the sole responsibility of the designated prize recipient or designated prize recipients to the extent authorized elsewhere in these rules, to allocate any prize funds among its member organizations or teammates as they deem appropriate. The Prize Administrator will not arbitrate, intervene, advise on, or resolve any matters or disputes between team members.

6.4. Submission Rights

By making a submission and consenting to the rules of the contest, a team is granting to DOE, the Prize Administrator, and any other third parties supporting DOE in the contest an unlimited license to display publicly and to use any part(s) of the submission that are designated as "public" in the Official Rules for any government purpose. This license includes posting or linking to the public portions of the submission on the Prize Administrator or HeroX submissions, including the contest website, DOE websites, and partner websites, and the inclusion of the submission in any other media worldwide. The submission may be viewed by DOE, the Prize Administrator, and judges and reviewers for purposes of the contests, including but not limited to screening and evaluation purposes. The Prize Administrator and any third parties acting on their behalf will also have the right to publicize teams' names and, as applicable, the names of team member organizations, which participated in the submission on the contest website indefinitely.

By entering, the team represents and warrants that:

6.4.1. The team's entire submission is an original work by the team, and the team has not included third-party content (such as writing, text, graphics, artwork, logos, photographs, likeness of any third party, musical recordings, clips of videos, television programs or motion pictures) in or in connection with the submission, unless (i) otherwise requested by the Prize Administrator and/or disclosed by the team in the submission, and (ii) team has either obtained the rights to use such third-party content or the content of the submission is considered in the public domain without any limitations on use.

6.4.2. Unless otherwise disclosed in the submission, the use thereof by the Prize Administrator, or the exercise by the Prize Administrator of any of the rights granted by the team under these rules, does not and will not infringe or violate any rights of any third party or entity, including, without limitation, patent, copyright, trademark, trade secret, defamation, privacy, publicity, false light, misappropriation, intentional or negligent infliction of emotional distress, confidentiality, or any contractual or other rights.

6.4.3. All persons who were engaged by the team to work on the submission or who appear in the submission in any manner have:

1. Given the team their express written consent to submit the submission for exhibition and other exploitation in any manner and in any and all media, whether now existing or hereafter discovered, throughout the world
2. Provided written permission to include their name, image, or pictures in or with the submission (or, if a minor who is not the team's child, the team must have the permission of the minor's parent or legal guardian) and the team may be asked by the Prize Administrator to provide permission in writing
3. Not been and are not currently under any union or guild agreement that results in any ongoing obligations resulting from the use, exhibition, or other exploitation of the submission.

6.5. Copyright

Each team represents and warrants that the team is the sole author and copyright owner of the submission; that the submission is an original work of the team or that the team has acquired sufficient

rights to use and to authorize others, including DOE, to use the submission, as specified throughout the rules; that the submission does not infringe upon any copyright or any other third-party rights of which the team is aware; and that the submission is free of malware.

6.6. Contest Subject to Applicable Law

All contests are subject to all applicable federal laws and regulations. Participation constitutes each participant's full and unconditional agreement to these Official Rules and administrative decisions, which are final and binding in all matters related to the contest. This notice is not an obligation of funds; the final award is contingent upon the availability of appropriations.

6.7. Resolution of Disputes

DOE is solely responsible for administrative decisions, which are final and binding in all matters related to the contest.

Neither DOE nor the Prize Administrator will arbitrate, intervene, advise on, or resolve any matters between team members or among teams.

6.8. Publicity

The winners of these prizes (collectively, "winners") will be featured on DOE and NREL websites.

Except where prohibited, participation in the contest constitutes each winner's consent to DOE's and its agents' use of each winner's name, likeness, photograph, voice, opinions, and/or hometown and state information for promotional purposes through any form of media worldwide, without further permission, payment, or consideration.

6.9. Liability

Upon registration, all participants agree to assume any and all risks of injury or loss in connection with or in any way arising from participation in this contest. Upon registration, except in the case of willful misconduct, all participants agree to and thereby do waive and release any and all claims or causes of action against the federal government and its officers, employees, and agents for any and all injury and damage of any nature whatsoever (whether existing or thereafter arising; whether direct, indirect, or consequential; and whether foreseeable or not), arising from their participation in the contest, whether the claim or cause of action arises under contract or tort.

DOE has determined that no liability insurance naming DOE as an insured will be required of teams to compete in this competition per 15 U.S.C. § 3719(i)(2). Teams should assess the risks associated with their proposed activities and adequately insure themselves against possible losses.

6.10. Records Retention and Freedom of Information Act

All materials submitted to DOE as part of a submission become DOE records and are subject to the Freedom of Information Act. The following applies only to portions of the submission not designated as public information in the instructions for submission. If a submission includes trade secrets or information that is commercial or financial, or information that is confidential or privileged, it is furnished to the Government in confidence with the understanding that the information shall be used or disclosed only for evaluation of the submission. Such information will be withheld from public disclosure to the extent permitted by law, including the Freedom of Information Act. Without assuming any liability for inadvertent disclosure, DOE will seek to limit disclosure of such information to its employees and to

outside reviewers when necessary for review of the submission or as otherwise authorized by law. This restriction does not limit the Government's right to use the information if it is obtained from another source.

Submissions containing confidential, proprietary, or privileged information must be marked as described below. Failure to comply with these marking requirements may result in the disclosure of the unmarked information under the Freedom of Information Act or otherwise. The U.S. Government is not liable for the disclosure or use of unmarked information and may use or disclose such information for any purpose.

The submission must be marked as follows and identify the specific pages containing trade secrets, confidential, proprietary, or privileged information: "Notice of Restriction on Disclosure and Use of Data: Pages [list applicable pages] of this document may contain trade secrets, confidential, proprietary, or privileged information that is exempt from public disclosure. Such information shall be used or disclosed only for evaluation purposes. [End of Notice]"

The header and footer of every page that contains confidential, proprietary, or privileged information must be marked as follows: "Contains Trade Secrets, Confidential, Proprietary, or Privileged Information Exempt from Public Disclosure." In addition, each line or paragraph containing proprietary, privileged, or trade secret information must be clearly marked with double brackets.

Teams will be notified of any Freedom of Information Act requests for their submissions in accordance with 10 CFR part 1004. Teams may then have the opportunity to review materials and work with a Freedom of Information Act representative prior to the release of materials. DOE does intend to keep all submission materials private except for those materials designated as "will be made public." DOE will make its own determination about the status of the information and treat it according to its determination. DOE makes the final determination.

6.11. Privacy

If you choose to provide HeroX with personal information by registering or completing the submission package through the contest website, you understand that such information will be transmitted to DOE and may be kept in a system of records. Such information will be used only to respond to you in matters regarding your submission and/or the contest unless you choose to receive updates or notifications about other contests or programs from DOE on an opt-in basis. DOE and NREL are not collecting any information for commercial marketing.

6.12. General Conditions

DOE reserves the right to cancel, suspend, and/or modify the prize or any part of it, at any time. If any fraud, technical failures, or any other factor beyond DOE's reasonable control impairs the integrity or proper functioning of the prize, as determined by DOE in its sole discretion, DOE may cancel the prize. Any performance toward prize goals is conducted entirely at the risk of the team, and DOE shall not compensate any teams for any activities performed in furtherance of this prize.

Although DOE may indicate that it will select up to several winners for each prize, DOE reserves the right to only select teams that achieve the goals of the program. If, in DOE's determination, no teams achieve the goals of the program, DOE will select no teams to be winners and will award no prize money.

DOE may conduct a risk review, using Government resources, of the competitor and project personnel for potential risks of foreign interference. The outcomes of the risk review may result in the submission being eliminated from the prize competition. This risk review, and potential elimination, can occur at any time during the prize competition. An elimination based on a risk review is not appealable.

6.13. Program Policy Factors

While the scores of the expert reviewers will be carefully considered, it is the role of the prize judge to maximize the impact of prize funds. Some factors outside the control of teams and beyond the independent expert reviewer scope of review may need to be considered to accomplish this goal. The following is a list of such factors. In addition to the reviewers' scores, the below program policy factors may be considered in determining winners:

- Geographic diversity, urbanization diversity (i.e., cities, suburbs, towns, villages), and potential economic impact of projects
- Whether the use of additional DOE funds and provided resources are non-duplicative and compatible with the stated goals of this program and the DOE mission generally
- The degree to which the submission exhibits programmatic or technological diversity, including diversity in types of buildings served, when compared to the existing DOE project portfolio and other teams
- The degree to which the submission is likely to lead to increased employment and manufacturing in the United States, enhance economic inclusion, or provide other economic benefits to U.S. taxpayers
- The degree to which the submission will accelerate transformational technological, financial, or workforce advances in areas that industry by itself is not likely to undertake because of technical or financial uncertainty
- The degree to which the submission supports complementary DOE-funded efforts or projects, which, when taken together, will best achieve the goals and objectives of DOE
- The degree to which the submission expands DOE's funding to new teams and recipients who have not been supported by DOE in the past
- The degree to which the submission enables new and expanding market segments
- Whether the project promotes increased coordination with nongovernmental entities and increased coordination among governmental entities (e.g., between a local and state government or between housing and energy agencies within local or state government) toward enabling a just and equitable clean energy economy in their region and/or community
- The degree to which the submission demonstrates a best practice approach to delivering multiple benefits to the community (e.g., emissions reductions, health benefits, local workforce and contractor development, inclusive procurement practices, energy and housing affordability, preventing displacement)

6.14. Return of Funds

As a condition of receiving a prize, teams agree that if the prize was made based on fraudulent or inaccurate information provided by the team to DOE, DOE has the right to demand that any prize funds or the value of other non-cash prizes be returned to the government. ALL DECISIONS BY DOE ARE FINAL AND BINDING IN ALL MATTERS RELATED TO THE PRIZE.