PG&E ESA Program Logic Model:
Mapping the Current Program as a Basis for Future Program Updates

What Is A Logic Model?

A program logic model illustrates a program's theory: a road map showing how to get from Goals to Outcomes

Logic Model Components

Goals:	Where the program is going, what the program *intends* to accomplish
Resources:	Inputs, what is invested in the program
Barriers:	Impediments to ESA reaching its goals
Assumptions:	Critical expectations that program activities will result in specific desired outcomes
Exogenous factors:	External conditions or influences on the program beyond the program's control
Activities:	Processes, events, and actions used to bring about the intended results or changes
Outputs:	Direct products of the activities--who and how many are reached
Outcomes:	Expected changes that happen as a result of the activities--outcomes show how the program is progressing and how to recognize when its goals are realized

Why Use A Logic Model

- Document how ESA's activities logically lead to the results PG&E and stakeholders want to achieve
- Enhance a shared understanding among PG&E staff and stakeholders about ESA's goals, strategies, and underlying assumptions
- Support efforts to update the program's design, marketing, implementation, and evaluation
- Help ESA program staff discuss the program with others at PG&E, implementers, contractors, regulators, and other stakeholders

Contents of this Document

PG&E ESA Program
Logic Model Reader Guide

Legend

Label	Goal	Resource	Exogenous Factor	Success	Challenge
Market Barrier	Activity	Activity Detail	Output or Outcome Currently Tracked	Output or Outcome Not Currently Tracked	Assumption

Definitions

Short Term: *Monthly or quarterly*
Medium Term: *Annually*
Long Term: *Program cycle (multiple years)*

Data Sources

Symbol	Source
<None>	Interviews with PG&E and ED staff, & implementers; monthly program and annual ESA reports
*	2008 Strategic Plan (CPUC and CEC)
**	2021- 2026 CPUC Guidance document and white paper
***	2021-26 PG&E ESA Application

Symbol	Source
†	CPUC Code
††	RHA Customer Journey Map

Abbreviations

CBO: Community-Based Organizations
CEC: California Energy Commission
CIP: PG&E's Central Inspection Program
CPUC: California Public Utilities Commission
CSI: California Solar Initiative
DG: Distributed generation
DR: Demand response
ED: Energy Division of the CPUC
EE: Energy Efficiency or Energy Efficient
ES: Energy Specialists
ESA: Energy Savings Assistance Program
HCS: Health, Comfort, and Safety
HERS: Home Energy Rating System
HH: Household
HVAC: Heating, Ventilation, Air Conditioning
IOU: Investor-Owned Utility
LI: Low Income
LIEE: Low Income Energy Efficiency
LIHEAP: Low Income Home Energy Assistance Program
LINA: Low Income Needs Assessment
LIWP: Low Income Weatherization Program
Low-E: Low-efficiency
MASH: California's Multifamily Solar Homes Program
NEB: Non-energy benefit
NGAT: Natural Gas Appliance Test (technicians)
PG&E: Pacific Gas & Electric
SASH: California's Single Family Affordable Solar Homes Program
SPOC: PG&E's multifamily Single Point of Contact program
WAP: Weatherization Assistance Program
WS: Weatherization Specialists

PG&E ESA Program
Logic Model Goals

2008-2020 Goals

- Treat all *willing and eligible* low-income households in PG&E's service area by 2020 with no-cost energy-efficiency and health, comfort, and safety services and measures and energy education*
  - Increase participant understanding of home energy use and change participant behaviors to support energy use reductions*
  - Reduce LI customers' electric and gas consumption, and bills†
  - Improve the health, comfort, and safety of the customer
- Serve as an energy resource by delivering increasingly cost-effective and longer-term savings*
  - Balance energy savings with NEBs to ensure program is as cost-effective as possible*†
- Encourage local employment and job skill development†

PG&E Draft 2021-2026 Goals

- Encourage energy savings in each participating home through resource measures; achieve energy savings as cost-effectively as possible.***
- Encourage installation of non-resource measures that promote health, comfort, and safety***
- Identify and serve qualified households not yet treated by ESA and households where a significant need for services exists
- Manage a portfolio of measures that, taken as a whole, provide overall energy savings and contribute to California's greenhouse gas Emissions Reduction targets***
- Administer innovative approach for multifamily housing***
- Help improve the environmental factors and social justice inequities impacting income-qualified customers***

ED Draft 2021-2026 Goals--Guidance Document

- Realize deep (average) savings per participating HH: energy savings from resource measures; HCS benefits from non-resource measures**
- Realize specific numbers of participants (HHs) annually: include HH not yet served by ESA and HH where a significant need for service exists**
- Realize specific portfolio-level energy savings annually: energy savings with avoided greenhouse gas emissions, kWh, therms, and kBTUs (combining kWh and therm savings)
- Hit targets for additional metrics such as indicators for energy burden, public health indicators, and/or climate change

ED Draft 2021-2026 Goals--White Paper

- Increase year-over-year average energy savings per treated household by at least 5% per year**
- Maximize ESA household participation and coordination with other IOU clean energy programs that reduce hardship at the household level**
- Build a universal low-income customer application system**

***** Citations for 2021-26 PG&E ESA Application: (Note that PG&E Draft 2021-2026 Goals are not numbered above because we did not want readers to assume the goals are prioritized. However, they're numbered here for easier reference)**
Goal #1: p. I-48, lines 1-3 and Table 1-11; p. I-62, lines 6-7
Goal #2: p. I-48, lines 1-3 and Table 1-11
Goal #3: p. I-50, lines 6-17; p. I-63, lines 1-2
Goal #4: p. I-52, lines 3-5
Goal #5: p. I-35, lines 10-12 (and mentioned during our discussions with Lori)
Goal #6: p. I-63, lines 9-11

Previously listed goal that is not included above: "Increase ease of participation for qualified customers" (see Table I-16, p. I-80; also mentioned during some of our discussions). This seems more like an implementation issue rather than a high-level program goal. However, please let us know if we should add it back into the list above.

***** Citations for 2021-26 ED Draft Goals--Guidance Document:**
All from pp. 7-9

PG&E ESA Program
Program Resources and Exogenous Factors

Resources

- Human expertise:
  - PG&E staff
  - Regulators
  - Network of partners throughout PG&E's service area (private contractors and CBOs)
  - Skilled contractor workforce: ESs; WSs; NGATs; HVAC, AC tune-up, and large appliance contractors
  - Ratepayer and customer advocates, environmental groups, and other stakeholders
- Funding: ratepayer/public purpose monies
- Tools: CPUC-established ESA Policy and Procedures Guide and Installation Manual

Exogenous Factors

- Regulatory requirements and process:
  - Current Statewide ESA Installation Standards allow only like-for-like measure replacements (e.g., replacing a low-E gas furnace with a ductless mini-split heat pump, which could result in energy savings, is not permitted)
  - Due to 3-year program cycle (in contrast to general EE programs' 1-year cycle), and lengthy mid-cycle advice letter process, changes ESA is not nimble, changes cannot be implemented quickly
- Impacts of COVID-19 pandemic: economic downturn, restrictions on customer contact
- Wary customers: e.g., due to immigration status, seniors concerned about getting scammed, no PG&E logos on contractor-developed outreach materials
- Structural degradation can render some measures infeasible

PG&E ESA Program
Successes and Considerations for Future Program Refinements

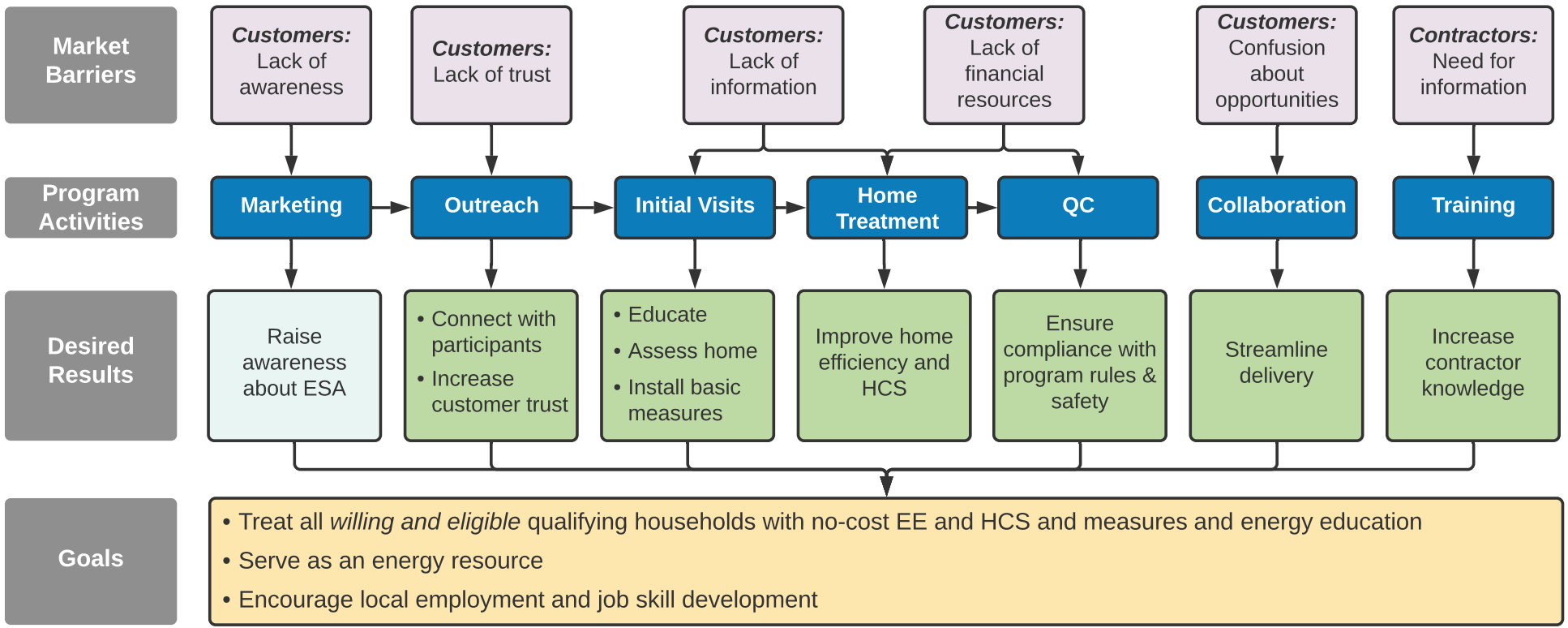
Successes

- PG&E met 2020 goal of treating all eligible, willing, and feasible households
- ESA improves the energy efficiency and internal environment of treated homes at no cost to qualifying participants
- ESA provides resource savings and grid resources to PG&E
- Robust network of skilled partners make positive contribution to local economies

Considerations for Future Program Refinements

- PG&E's low-income customers have varying energy needs based on their climate, setting (urban, suburban, rural), access to multiple fuels (e.g., electricity, natural gas, propane), and demographics
- Target population changes over time due to changing customer circumstances
- Improved baseline equipment efficiencies mean less potential for energy savings
- Replacing or repairing inoperable and under-used baseline equipment leads to rebound effects that undermine program cost-effectiveness (although they improve participants' HCS)
- Measure and program cost-effectiveness can be difficult to attain:
  - ESA includes HCS measures that may not have energy benefits.
  - Program covers full measure cost and labor.
- Competing ED priorities: maximizing program or per-HH savings, achieving HCS improvements, maximizing program cost-effectiveness, serving customers most likely to participate, serving customers with greatest need.
- Historic environmental injustices experienced by many low income communities are difficult to reverse.

PG&E ESA Program
Logic Model Overview



PG&E ESA Program
Logic Model

-- The following pages show ESA Program Logic Model details for each program activity --

Activity: Market ESA to LI Customers

Activity Detail

- Conduct targeted marketing
- Attend PG&E events
- Use mass media to promote LI programs
- Outreach to tribal communities
- Track marketing response
- Use ESA propensity model for outreach

Outputs

- # pieces collateral distributed:
  - Mailers,emails
  - Large print ESA fact sheets
  - Braille fact sheets
  - CARE welcome kit enclosures
- # of PG&E Lobby Days with a LI program rep presence
  # Postings at Bill Pay Centers
- # of social media postings
  # of CARE paid media (radio and TV) spots that mention ESA
- # of tribal communities participating
- # of HH in tribal communities recruited
- #, % of ESA applications returned from CARE welcome kits
- #, % of direct mail recipients submitting program applications
- Click-through rates from program emails
- Traffic to ESA homepage
- #, % of applications submitted online
- # LI customers in high-propensity (to participate) groups

Short Term Outcomes

- ESA (and other LIEE) program info integrated into EE marketing*
- Target population aware of portfolio of programs available to low-income customers
- Target population exposed to program marketing and information through multiple channels, increasing likelihood to participate
- Use of ESA propensity model strengthens marketing by focusing on customers most likely to participate
- Customers driven to ESA homepage
- Qualified leads generated for implementors

Medium Term Outcomes

- ESA meeting program participation goals
- ESA has recognizable and trustworthy brand/tagline
- Marketing regularly refined to reach customers through preferred/most effective channels
- Marketing messaging regularly refined to reach most likely eligible customers using ESA propensity model and most effective messaging

Long Term Outcomes

- All eligible and willing customers aware of ESA and enrolling for initial in-home visit

Successes:
- 2007, 2013, 2016, 2019 LINA findings were used to inform/refine ESA marketing.
- Non-digital marketing response rates are above the industry standard.

Considerations for Future Program Refinements:
- It can be challenging to engage the 40% of eligible customers (statewide) who have not wanted to participate. Reasons for non-participation include:
  - Do not want strangers in the home
  - Concerned about immigration status/issues
  - Cannot take time off work for one or more ESA visits.
- The ESA propensity model identifies customers who are most likely to participate; it was not designed to target specific customer segments.

Notes:
- Tracked metrics (outputs, outcomes) may be documented/reported monthly, annually, and/or per program cycle.

Assumptions:
- ESA propensity model accurately identifies customers who are most likely to participate.

Activity: Outreach to LI Customers

Activity Detail

- Contractors use PG&E information to identify customers in "self-certification" areas
- Contractors identify customers through:
  - PG&E database - CARE enrollees, customers by zip+7, potential retreatments
  - ESA propensity model - customers most likely to participate
  - Referrals from other programs (LIHEAP et. al.)
- Contractors promote ESA at PG&E Lobby Days, and through community partners and events
- Contractors outreach to their communities
- Contractors use mass media and social media to promote ESA
- Contractors contact customers directly via email, postcards, phone calls, door-to-door canvassing, and property management companies

Outputs

- # of paid media (radio) spots and interviews with contractors
- # of social media postings by contractors
- # of self-certified areas reached
- # of HH in self-certified areas contacted
- # of phone calls, emails, and other contacts with customers
- # PG&E Lobby Days attended by contractors discussing ESA with customers
- # of community events attended
  - By county
  - By time of year
  - # of senior resource fairs
  - # of health resource fairs
- # of contractors driving participation
- # of HH recruited per contractor
- #, % of HH scheduled for initial in-home visit

Short Term Outcomes

- Targeted-customer trust in ESA is built through contact with contractors
- Contractors schedule initial in-home visits with customers
- Contractors continually assess outreach approaches and messaging in light of # customers scheduled for initial in-home visits, identify most effective recruitment methods

Medium Term Outcomes

- Customers share information about ESA with friends & neighbors
- Outreach approaches and messaging regularly refined to reach customers through preferred/most effective methods

Long Term Outcomes

- All eligible and willing customers have scheduled initial in-home visit

Successes:

- Contractors have ties to, are respected in, and have cultural competency and understanding of the communities where they work; they are effective in tailoring their approaches.

Considerations for Future Program Refinements:

- Identifying and reaching eligible customers who have not yet participated: e.g., customers with trust concerns (elderly, those with immigration concerns) can be challenging.
- For-profit contractors and mission-driven contractors have different motivations for conducting outreach.

Notes:

- Tracked metrics (outputs, outcomes) may be documented/reported monthly, annually, and/or per program cycle.
- "Contractors" includes both CBOs and non-CBO contractors.

Activity: Conduct Initial In-Home Visits

Activity Detail

- Verify eligibility and complete customer enrollment
- Educate participants on EE and PG&E programs
- Conduct initial assessment
- Install basic measures

Outputs

- # of customer complaints
- #, % of households receiving initial in-home visit:
  - Total
  - First-touch, retreated
  - Single family, multifamily, mobile home
  - Urban/rural, by county
  - With a disabled customer
  - On tribal lands
  - Scheduled but never completed (drop-outs)
- Avg # of simple measures installed per home
  - By measure type
- #, % of participants enrolled in "Your Account"
- #, % of HH receiving EE education
- #, % of applicants meeting ESA income eligibility requirements
- #, % of HH receiving initial energy assessment
- #, % of households receiving simple measures

Short Term Outcomes

- Participants know where and how to use PG&E's online tools (e.g., Home Energy Check-Up) to manage their energy bills
- Participants have greater awareness of EE and learn ways to:
  - Save money on their energy bills
  - Increase the EE of their homes
  - Make their homes healthier, more comfortable, and safer
- Participants schedule full energy assessments and treatments
- Participants experience initial energy and HCS improvements to their homes

Medium Term Outcomes

- Participants educated on the benefits of EE behaviors
- Participants make energy-saving behavior changes at home
- Participants share information about program experience and EE info with friends & neighbors
- ESA experience affects participants' future purchase decisions about energy-using equipment

Long Term Outcomes

- In 2020: 100% of eligible and willing income-qualified HH have had initial in-home visit
- Homes experience energy bill impacts
- Treated homes provide energy impacts to PG&E

Successes:

- Conducted initial visits in over 2 million homes from 1983 through the end of 2018.***

Considerations for Future Program Refinements:

- Participants are required to prove their income eligibility and sign documents in multiple places: the income eligibility process is complicated and can feel demeaning to some customers.
- For renters: obtaining landlord's signature can be extremely challenging (e.g., from a landlord who owns dozens of properties).
- Lack of dedicated grassroots trusted messengers makes it difficult to reach the hardest-to-reach customers.
- Renters are often hesitant to ask landlords for permission for upgrades due to fear of rent increases.
- Management of customer expectations during sign up: customers may become frustrated if they get only basic measures when program markets the possibility of receiving more substantial measures/improvements. As a result, the ESs may have difficulty keeping customers engaged.
- The standard of 200% Federal Poverty Level may not capture the entire LI segment, potentially limiting the number of customers eligible for ESA.

Notes:

- Tracked metrics (outputs, outcomes) may be documented/reported monthly, annually, and/or per program cycle.

Activity: Treat Participant Homes

Activity Detail

- WSs conduct full energy assessment
- NGAT technicians check safety of gas-consuming equipment, make repairs (as appropriate)
- WSs install EE measures, perform repairs, make referrals to other contractors (as appropriate)
- Specialty contractors (HVAC, duct, appliance, et. al.) repair or replace / install new EE equipment (as appropriate)

Outputs

- % of participants reporting contractors were professional and courteous (implementer survey)
- # of customer complaints
- # of homes treated:
  - Total
  - Planned & actual
  - % of all eligible
  - % of all homes assessed
  - First touch, retreated
  - Urban/rural, by county
  - On tribal lands
- Contractors' production rates
- # of measures replaced, # of new EE measures installed:
  - Total
  - Average per home
  - Specialty measures for disabled participants
- # of measures repaired:
  - Total
  - Average per home
  - For disabled participants
- Bill savings per household:
  - 1st year, lifecycle
- Energy & demand savings:
  - Annual, lifecycle
  - kWh, therms, kW
  - Planned, actual
  - First touch, retreated

Short Term Outcomes

- Participants are highly satisfied with program
- Participants begin to experience and appreciate HCS improvements
- Repaired and newly installed EE equipment operates properly, efficiently
- Participants begin to see bill impacts

Medium Term Outcomes

- Participants continue to experience and appreciate HCS improvements
- Monthly and annual ESA program-level savings targets met
- Treated homes experience energy impacts, and energy bills reflect energy impacts

Long Term Outcomes

- Participants have improved quality of life due to treatments
- In 2020: 100% of eligible and willing income-qualified customers treated
- Treated homes experience long-term energy impacts
- Treated homes provide long-term energy impacts to PG&E

Successes:

- Treated over 2 million homes from 1983 through the end of 2018:***
  - In aggregate, participants have saved over $902 million on their energy bills.
  - In aggregate, participants have reduced their electric use by over 634 GWh and their natural gas use by over 28.8 million therms.
- Direct installation program has operated at no cost to participants.
- Customers generally very satisfied with the program: report participation has improved their home environment/quality of life.

Considerations for Future Program Refinements:

- The program does not always offer measures customers actually want or will use (e.g., want stainless fridge but offered only white).
- Customers may experience up to 10 or more touchpoints.
- Entire process can take up to 2 months or longer.
- Lengthy/slow process to respond to market or measure changes (e.g., poor customer response to a measure).
- HVAC and appliance contractors explain new equipment to customer at time of installation, but person home during delivery may not be person who usually operates it.
- WSs and HVAC contractors must rely on nameplate information to determine if customer qualifies for replacement for inefficient, working furnaces.
- Strict installation rules do not allow contractors the flexibility to tailor measures to each participant home.

Notes:

- Tracked metrics (outputs, outcomes) may be documented/reported monthly, annually, and/or per program cycle.

Assumptions:

- Implementing all feasible measures (in accordance with program rules) renders treated homes more energy efficient than they were pre-treatment.
- Implementing all feasible measures (in accordance with program rules) improves the HCS of treated homes.

Activity: Conduct Quality Check

Activity Detail

- Review enrollment and other documentation uploaded to PG&E database by implementers
- Coordinate with CIP to inspect sample of treated homes

Outputs

- #, % of participants verified to meet income eligibility criteria: total, by contractor
- #, % of measures installed in compliance with program rules: total, by contractor
- #, % of inspected homes with all measures in compliance with program rules: total, by contractor
- #, % of treated homes where documented measures installed match CIP findings: total, by contractor
- #, % of contractors meeting "≥95%-feasible-measures" threshold
- #, % of feasible measures *not* installed: total, by contractor
- #, % of inspected homes with no natural gas hazards: total, by contractor
- #, % of NGAT results consistent with CIP findings: total, by contractor
- Contractor scorecard results
- #, % of treated homes passing inspection: total and by contractor

Short and Medium Term Outcomes

- Participants' homes experience energy impacts and energy bills energy impacts from program-compliant treatments
- Participants experience and appreciate HCS improvements
- High contractor scorecard ratings lead to steady or increasing assignments in subsequent year

Long Term Outcomes

- Treated homes experience long-term energy impacts
- Treated homes provide long-term energy impacts to PG&E
- Participants have improved quality of life due to HCS improvements

Successes:

- Participants generally consider post-treatment NGAT safety inspections and CIP inspections acceptable parts of the ESA process.

Considerations for Future Program Refinements:

- Once homes have been treated, some participants may not be inclined to schedule and complete follow-up NGAT safety inspections and CIP inspections.
- Some implementers and contractors believe the inspection rules are too strict (e.g. they have to return to a treated home if they initially missed installing one outlet cover plate that is located behind a couch).

Notes:

- Tracked metrics (outputs, outcomes) may be documented/reported monthly, annually, and/or per program cycle.
- Implementers' internal QA/QC activities and metrics are not included on this logic model.

Activity: Collaborate with Other Programs

Activity Detail

- Coordinate with other PG&E programs
- Develop partnerships to leverage resources, work with government agencies, CBOs, and other organizations*
- Identify where data sharing would be advantageous*
- Seek legislative changes to ease data sharing between agencies*
- Facilitate data sharing

Outputs

- # of CARE participants referred to ESA and enrolled in ESA
- # of PG&E HERS recipients referred to ESA
- # of PG&E HERS recipients enrolled in ESA
- # of contractors using PG&E load disaggregation reports
- # of referrals between multifamily SPOC & ESA
- # ESA participants referred to core EE, DR, and DG programs
- # of ESA participants referred to SASH
- # of ESA participants referred to MASH
- # of ESA participants referred to LIHEAP and LIWP
- # of non-IOU electric, gas, and water agencies coordinating with ESA
- # of ESA participants referred to programs
- # of tribal communities and related organizations coordinating with ESA
- # of SASH- and MASH-eligible homes provided ESA measure installation data
- # of LIWP data requests

Short Term Outcomes

- ESA participants aware of other PG&E LI programs, PG&E core EE and DR programs, and programs offered by other organizations

Medium Term Outcomes

- ESA participants participate in other PG&E LI, EE, DR, and AMI programs and programs offered by other organizations
- ESA's partnerships with other agencies and stakeholders maintained and expanded*
- New data sharing opportunities sought; new data sharing occurs*

Long Term Outcomes

- ESA integrated with core PG&E EE programs to achieve economies of scale*
- ESA participants enroll in additional programs, further reducing their energy bills and improving their home comfort and health
- Programs offered by other organizations integrated with ESA, streamlining and improving customer identification and program delivery*
- Data sharing with other agencies and stakeholders occurs regularly*

Successes:

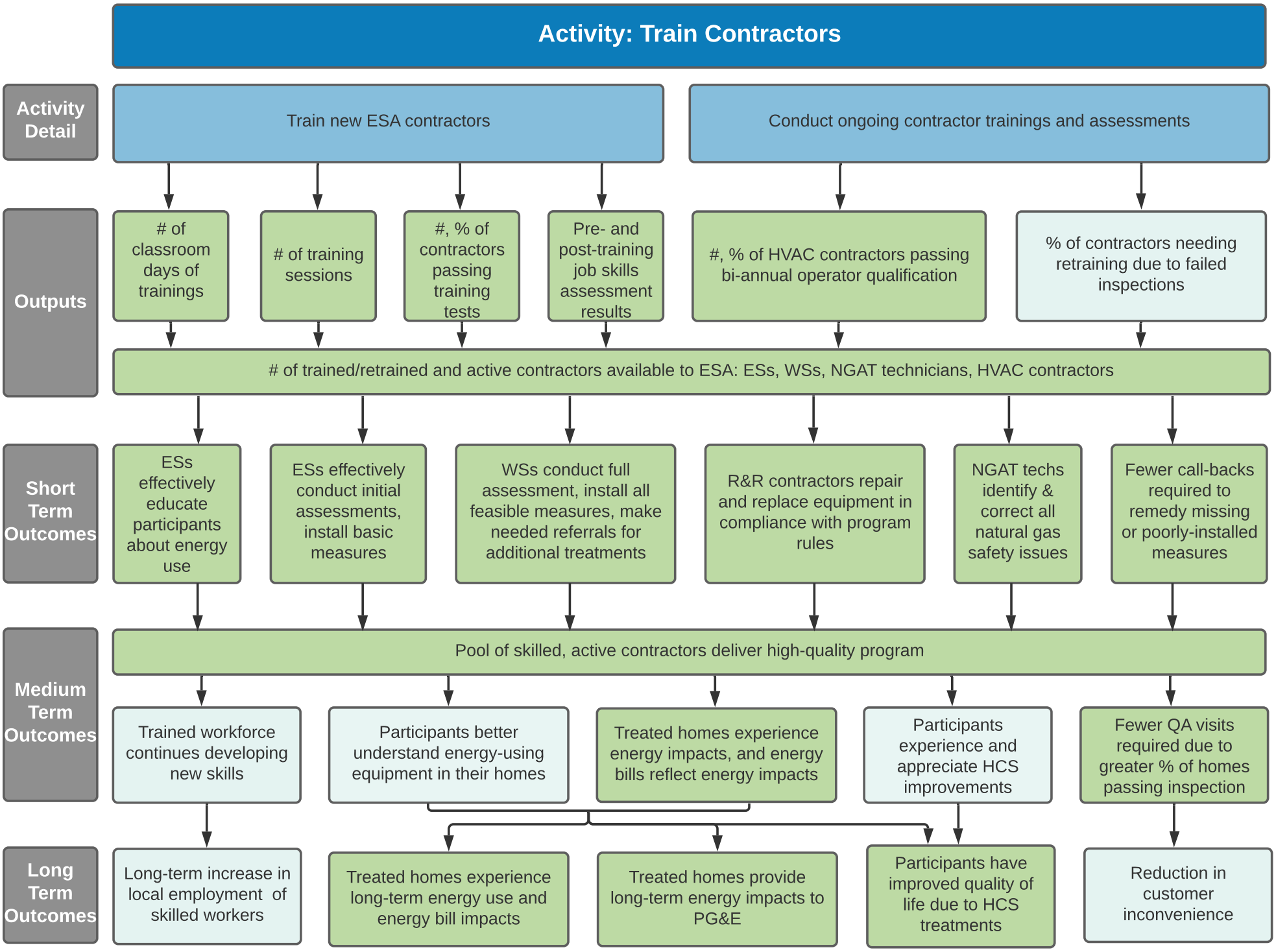
- Coordination with water agencies (e.g, ESA delivering kits and information to water agency customers; contractors leveraging opportunities).

Considerations for Future Program Refinements:

- Privacy concerns restrict data sharing and rendering coordination/leveraging resources with other organizations offering similar services and measures (e.g, with federal LIHEAP and WAP, California's Community Services and Development department) difficult/impossible.
- Where PG&E and another organization are serving the same customer, coordinating efforts so all contractors involved get maximum benefit can be complicated and challenging.
- ESA coordination with new technologies (e.g., batteries in wildfire safety zones, solar, electric vehicles) and power shut-off events can be complicated and challenging.
- Criteria for LI Solar (SASH/MASH) and other LI Residential Housing programs are not the same as ESA criteria.
- Ability to leverage other programs can be limited by those programs' resources.

Notes:

- Tracked metrics (outputs, outcomes) may be documented/reported monthly, annually, and/or per program cycle.



Successes:

- Two-tier system lowers employment barriers of entry, creates more jobs:
  1. ESs
  2. WSs, NGATs, duct technicians, and HVAC and appliance contractors.
- Contractors have opportunity to continue learning new skills; some move to specific (unionized) trades (e.g., HVAC specialty).

Considerations for Future Program Refinements:

- The level of documentation required by program administrators does not always align with mission-driven trusted program messengers (CBOs) with limited staff working on ESA and little interest in cost-effectiveness.
- There are limited contractor incentives for customer acquisition.
- Contractor training is only offered in English: languages such as Spanish, or Hmong could be beneficial.
- There is no universal training or certification for contractors participating in ESA and other programs that also target LI customers (e.g., LIHEAP).
- There is no two-way path for contractors to go between working in ESA and other EE programs.

Notes:

- Tracked metrics (outputs, outcomes) may be documented/reported monthly, annually, and/or per program cycle.

Assumptions:

- Implementers recruit sufficient numbers of new contractors to attend trainings to ensure full program coverage.
- PG&E trainings impart all necessary program and technical information to ESs, WSs, and NGAT technicians.
- Duct test and seal technicians, HVAC contractors, and appliance contractors acquire all necessary training and licenses outside of ESA program.
- PG&E or implementers track measures that inspections repeatedly note were feasible but not installed (total, and by contractor), research why the measures were missed, and address these omissions with additional training and/or changes to program rules.