Non-Gas Pipeline Alternative Working Group

Working Group Meeting #5

February 5, 2025

Energy+Environmental Economics

Agenda

Time	Topic
10-10:05	Welcome + Agenda
10:05-10:35	Community Engagement Findings – Marti Frank
10:35-10:45	Technical Subcommittee Read-out – E3
10:45-11:45	Stakeholder Feedback Discussion
11:45 – 12:30	Lunch
12:30-2:45	Stakeholder Feedback Discussion
2:45-3	Next Steps

Community Engagement

Report of findings
February 5, 2025

Two key areas for environmental justice input

Costs and benefits of an NPA

Factors that enable successful NPA execution

Use NPA typology to identify informants and research questions

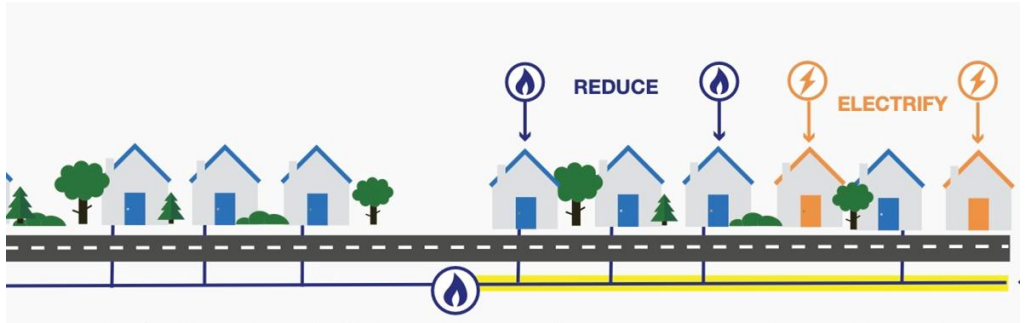
Homeowners

Rental property owners

Renters

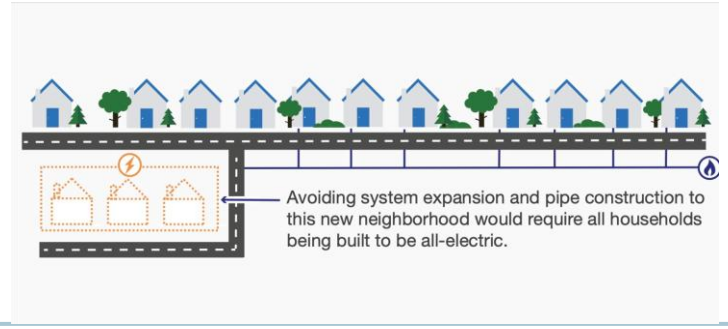
Avoid replacing pipes
Electrify whole homes

Avoid capacity increase
Electrify + gas efficiency



Property developers

Avoid system expansion
Build all-electric



Data collection overview

<table>
<tr><th>Stakeholder</th><th>Number of interviews</th><th>Number of attempts</th><th>Building type</th><th>New v. existing</th></tr>
<tr><td>Homeowners</td><td>8</td><td rowspan="2">36</td><td rowspan="2">Single family
Duplex</td><td rowspan="3">Existing</td></tr>
<tr><td>Renters</td><td>4</td></tr>
<tr><td>Individual property owners</td><td>4</td><td rowspan="2">27</td><td>Singe family
Duplex
Triplex</td></tr>
<tr><td>Corporate and nonprofit property owners and developers</td><td>6</td><td>Large multifamily</td><td>New and existing</td></tr>
<tr><td>EJ community advocates and service providers</td><td>9 members
3 focus groups</td><td colspan="3"></td></tr>
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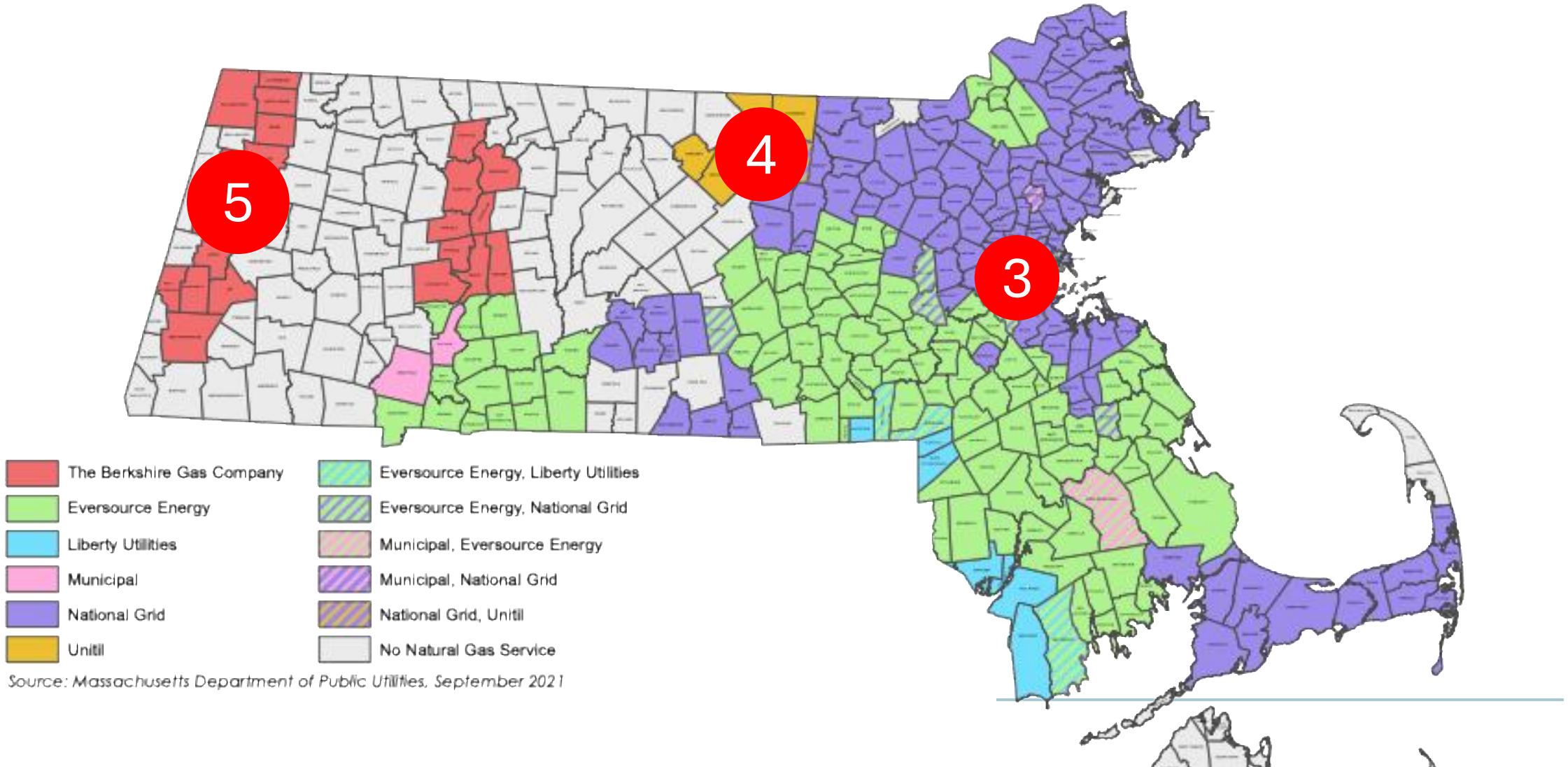
Homeowners and Renters

Locations of in-home interviews



Source: Massachusetts Department of Public Utilities, September 2021

Benefits of electrification vary, with no consensus

Benefit	Named by:
Getting equipment that is “current,” “green,” and/or “more efficient”	Under 40 homeowner Over 60 homeowner Over 60 renter
Receiving new appliances	Under 40 homeowner Over 60 renter
Air conditioning	Rental property owners (2)
Improved air quality	Over 60 homeowner
Replacing a gas stove with an electric stove	Over 60 homeowner
Getting heating & cooling in a single unit (DHP)	Under 40 homeowner
Removing an oil tank/oil boiler from the basement	Over 60 homeowner
Controlling heating/cooling system remotely, to enable greater efficiency (i.e. ability to turn it off from outside the home)	Under 40 homeowner
Not having to remove snow from the gas water heater vent	Over 60 homeowner
Lower electric costs resulting from improved efficiency of appliances	Over 60 renter
Avoiding ongoing maintenance of old cast-iron steam pipes	Rental property owner
Ability to transfer heating cost from property owner to renter	Rental property owner

Most have window AC but few are cool enough

It gets pretty warm but I can function.

It's steaming hot.

Risk of electrification: Utility affordability is precarious

Most received financial assistance for utilities and some found utility costs unmanageable

I went on food stamps and got a grant from school.

One bill has to wait. Wait on cell, cable, life insurance.

Willingness to pay more: May depend on utility affordability

Would you pay more for cleaner air and better air conditioning?

Most likely	Very concerned abut air quality and safety
Maybe	Can afford utility bills
Probably not	Can barely afford utility bills
No	Not sure can afford utility bills

All lean yes, if utility costs stay the same

I'd do any of it. I'd like new appliances.

I'd be more inclined if it left me with nothing to worry about.

I would have some reservations but I like the idea of getting off gas.

As long as the cost would even out, then yes.

Experts' suggestions for ensuring utility affordability

+ Electrification-specific rates and subsidies
+ No-cost-increase guarantee
+ Install technologies with lowest operating cost
+ Thoroughly weatherize homes
+ Rooftop solar or community solar

Risk of electrification: Unexpected and/or higher maintenance costs

Will an electrification project uncover new issues?

How much will I be left to pay for repairs? Will the utility cover all the costs truly?

Will ongoing maintenance costs increase?

If you go through our program, you get your heat pumps cleaned for two years and after that you're responsible. How much is that going to cost?

Experts' suggestions for addressing home maintenance concerns

- Include repairs
- Guarantee no out-of-pocket expenses
- Perform annual maintenance
- Reminders to perform maintenance
- Fix or replace failed equipment
- Train occupants
- Provide clear instructions

How would you like to hear about this offer?

Letter in the mail

From the utility, addressed to homeowner, noting they are already qualified for the offer

Friends, family or an organization they trust

Example orgs: schools, environmental orgs, planning commissions, CAP agency or other social service org, utility website

Not social media or other internet-based source

Half do not access Internet or social media at home

“Swiss Army knife” approach

Be prepared to speak to diverse benefits and concerns

Benefits

+ New equipment
+ Better functionality
+ Removal of old equipment
+ Home repairs

Concerns

+ Costs
+ Technology
+ Logistics
+ Safety
+ Legitimacy

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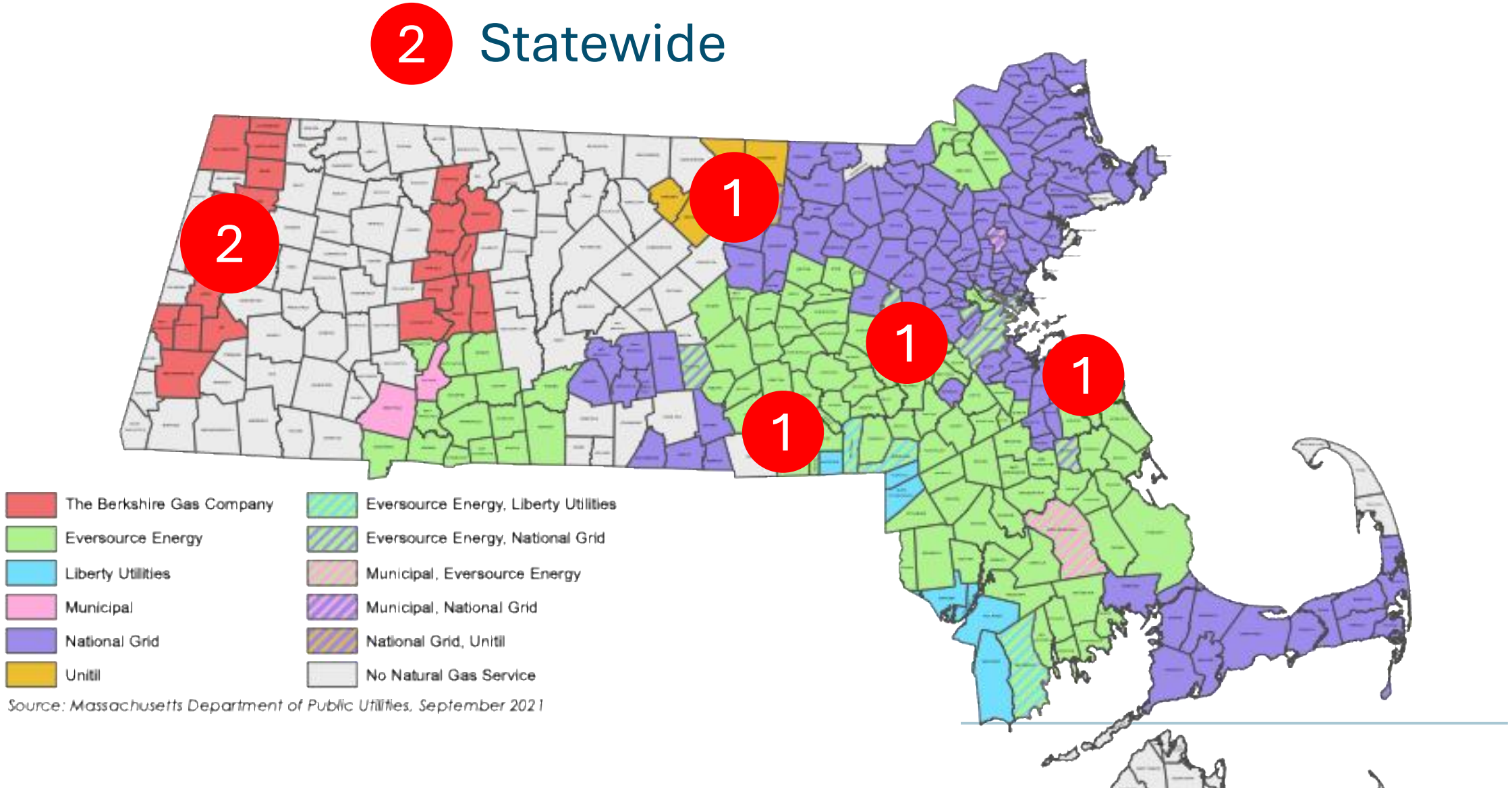
Multifamily Rental Property Owners & Developers

Multifamily rental property interviewee locations



Owners believe electrification benefits for renters are not substantial

If it saves money for the residents then sure, but I don't see other benefits. Our residents like having gas stoves, it's a big selling point.

I don't think [air conditioning from heat pumps] would attract new renters but it will make the property look better aesthetically.

Benefits for owners differ by owner type

Affordable housing orgs

+ New equipment
+ Building upgrades
+ Improved safety

Individual property owners

+ Transfer heating cost to renters
+ Avoid ongoing maintenance

Would rental property owners accept a no-cost offer to electrify?

Lean yes – 5 of 8

I would do it in a heartbeat.

That's a pretty easy sell.

We'd be excited about it.

Lean no – 3 of 8

I highly doubt the owners would be interested.

We would decline if ongoing utility cost was not addressed.

Electrification concerns for existing buildings

Major

+ Utility cost increase
+ Renter relocation
+ Grid readiness
+ Electric hot water

Minor

+ Maintenance
+ Time burden on owner
+ Qualifications of laborers
+ Familiarity with geothermal

Insubstantial

+ Comfort
+ Technological readiness of ducted/ductless heat pumps

Electrification considerations for new development

- Most moving toward all- or mostly-electric buildings
- Biggest concerns were grid readiness and hot water
- Utility decisions made early in design process

How should utilities tell you about this offer?

Who

Asset or property manager *existing buildings*

Development manager *new projects*

Sustainability consultants *new projects*

What

One pager *with requirements, timeline, process, contact person*

Detailed information *for a Board or group of decision-makers*

When

Day one *of new development design process*

Recommendations for further research

- Awareness and desirability of geothermal networks
- Refinement of messaging and materials
- Effectiveness and appeal of cost control measures

Technical Subcommittee Read-out

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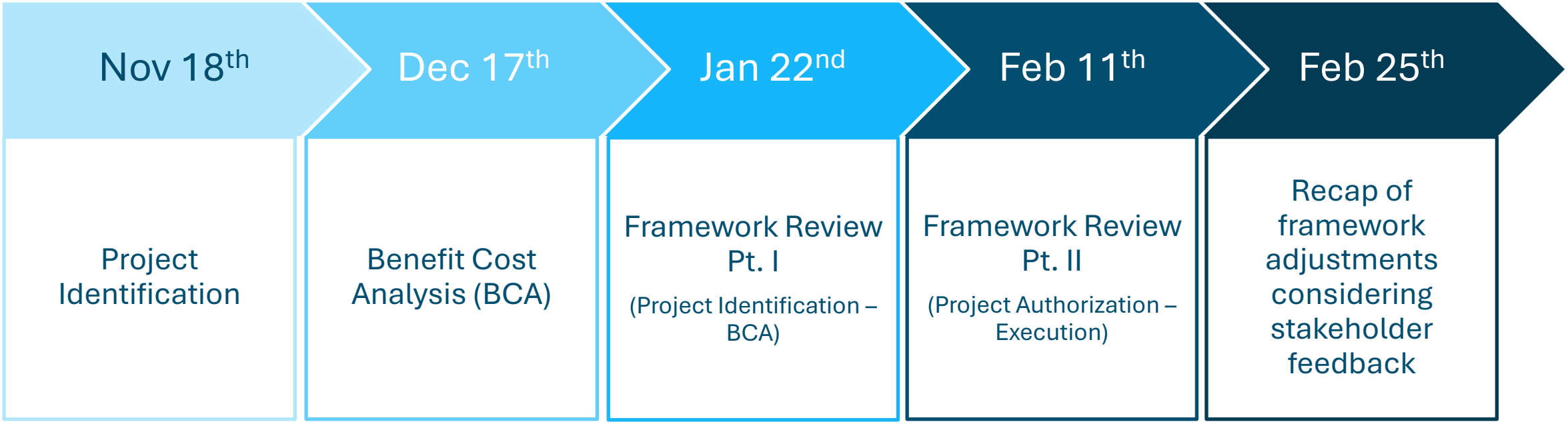
Technical Subcommittee Role and Meeting Topics

The Technical Subcommittee's role is to provide answers to the technical questions related to the NPA process, including those raised by the Working Group



Technical Subcommittee Members

Cities	City of Fitchburg
	City of Northampton
Environmental Organizations	Acadia Center
	HEETlabs
	RMI
	Current Energy Group (Sierra Club/CLF/EDF)
Environmental Justice Organizations	Action Inc (LEAN)
Gas and Electric Utilities	Berkshire Gas
	Eversource
	Liberty Utilities
	National Grid
	Unitil
Industry	Advanced Energy United
State Agencies	Brattle Group (Attorney General)
	Groundwork Data (Mass CEC)
	Synapse (DOER)
Universities	Boston University

Key Themes from Technical Subcommittee Meetings

- Call for utilities to establish processes for proactive NPA project identification and prioritization.
- Emphasis on identifying capital projects with sufficient lead time to ensure NPAs can be realistically implemented.
- Importance of integrated system planning and coordination across gas and electric utilities, as well as municipalities.
- Concerns with proposed LDC BCA framework being too restrictive.

Note that the key TSC themes were also submitted as part of the formal comment process, and they are currently under review and consideration by the LDCs.

Topic #1: Project Identification

Working Group Questions	Technical Subcommittee Input
How should the framework consider different scales of projects such as project cost and number of customers?	Thresholds can help prioritize high-potential NPA candidates. TSC expressed general support for thresholds related to cost, timing, and other factors. Nuance is needed in determining how thresholds are set.
What is the timing of NPAs and how do they interact with planning processes?	Gas capital planning processes may not be conducive to NPAs due to high-risk and short project timelines, and there is a need for a proactive identification process. Extending planning timeframes would make NPA projects more feasible. External factors, like city permitting, require flexible framework. Further collaboration with municipalities on coordinating works is needed.

Topic #2: Benefit Cost Analysis

Working Group Questions	Technical Subcommittee Input
What are the benefits and costs that should be considered within the framework?	BCA should not be overly limiting, and four tests may screen out too many NPAs. Concern with the inclusion of lost gas revenue as a cost within the Gas Ratepayer Impact Measure (G-RIM) test; proposed Ratepayer Impact Assessment or Utility Cost Test. Flag that the PCT may be unnecessary as participants will choose to participate or not. The draft framework provides flexibility by allowing for scores of <1, if justification can be provided.
How will the cost tests be layered, will all four be conducted for every possible NPA (i.e., even for small projects)?	
Should a Participant Cost Test (PCT) be Evaluated?	
Is the Total Resource Cost Test (TRC) the core test that will be performed in all cases?	TRC has garnered the most stakeholder support and will likely be one of the core tests.

Topic #2: Benefit Cost Analysis, cont.

Working Group Questions	Technical Subcommittee Input
How should carbon be treated? What is included in the social cost of carbon?	Social cost of carbon, air quality impacts and environmental justice impacts are accounted for within the established TRC+ test.
Are air quality benefits included in the cost test?	
Should environmental justice impacts be considered within the BCA?	
How do we account for customer stranded assets?	Traditional equipment should be assumed for participants as the counterfactual

Stakeholder Feedback on the Draft Framework

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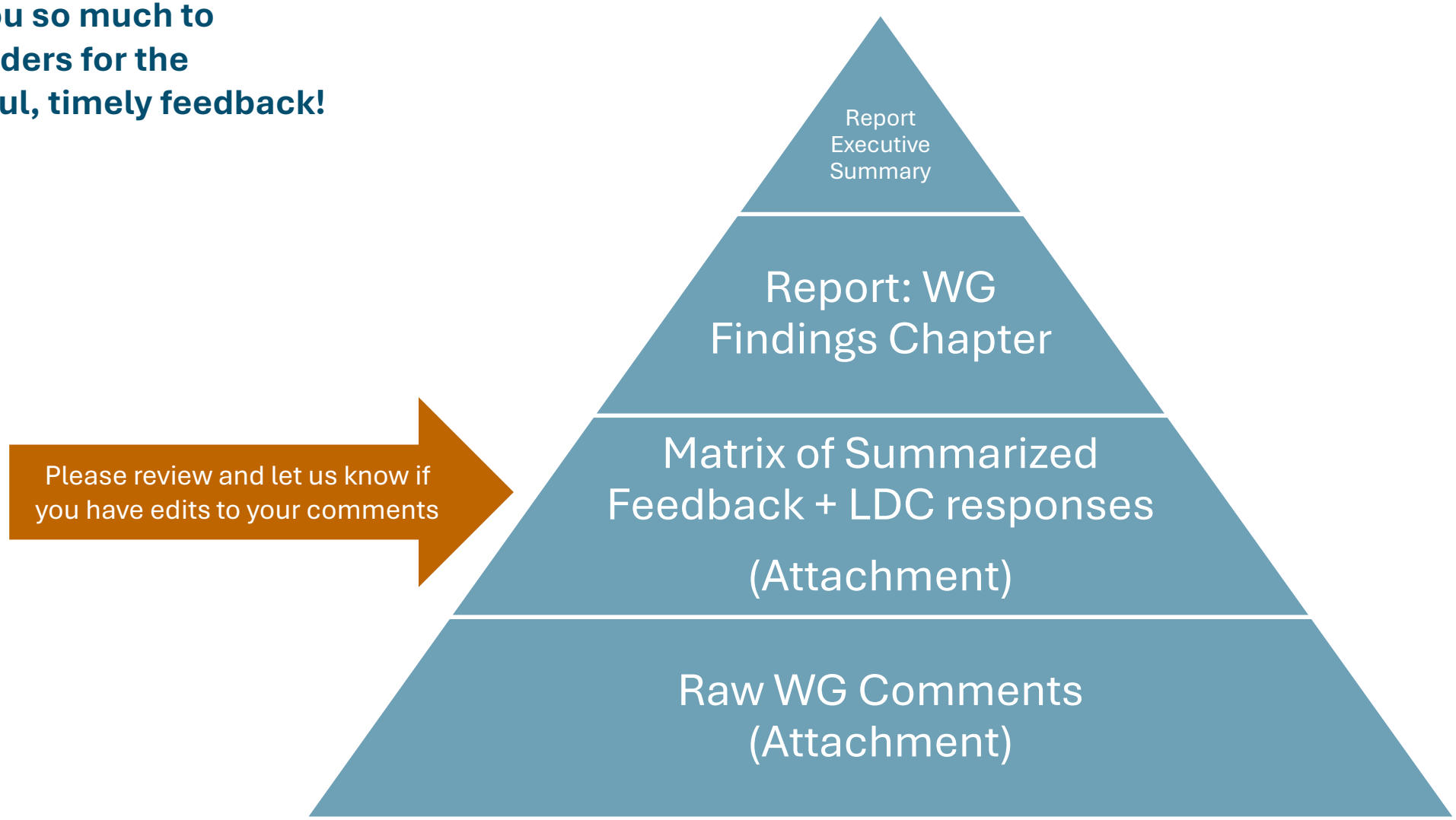
Working Group Feedback

- **Thank you so much to stakeholders for the thoughtful, timely feedback!**



Goals of Today's Discussion

We will confirm accuracy of comments, get more information, and discuss areas where clarification is needed

- **We'll be going through the framework comments to confirm accuracy and discuss certain topics in greater details.**
- **These comments have already been shared with LDC, who will be incorporating some of the feedback into their final framework.**
  - We will be reading out changes to framework for the March 5th meeting

Next Steps

- **Community Engagement**
  - Feb 14th – stakeholder feedback on community engagement presentation
- **Updated Framework**
  - Before March 5th, LDCs send Word document of framework and updated slides to stakeholders, incorporating some feedback
  - March 5th WG meeting
    - LDC presentation of updated framework. Stakeholder in-person feedback on framework
    - Based on feedback today we *may* have time for targeted stakeholders response presentations.
      - Please note DPU filing and CCP will be due in less than 30 days, so most decisions will be final.
- **LDC Filing – April 1st as part of CCP**

Framework Discussion

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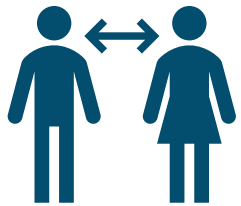
Draft Framework Feedback Overview

- Comments were received by 1/29
- Apex and E3 compiled and distilled comments on 1/30
- The LDCs, Apex, and E3 have been reviewing, interpreting, and considering all submitted comments

16 Stakeholder Entities Provided Input

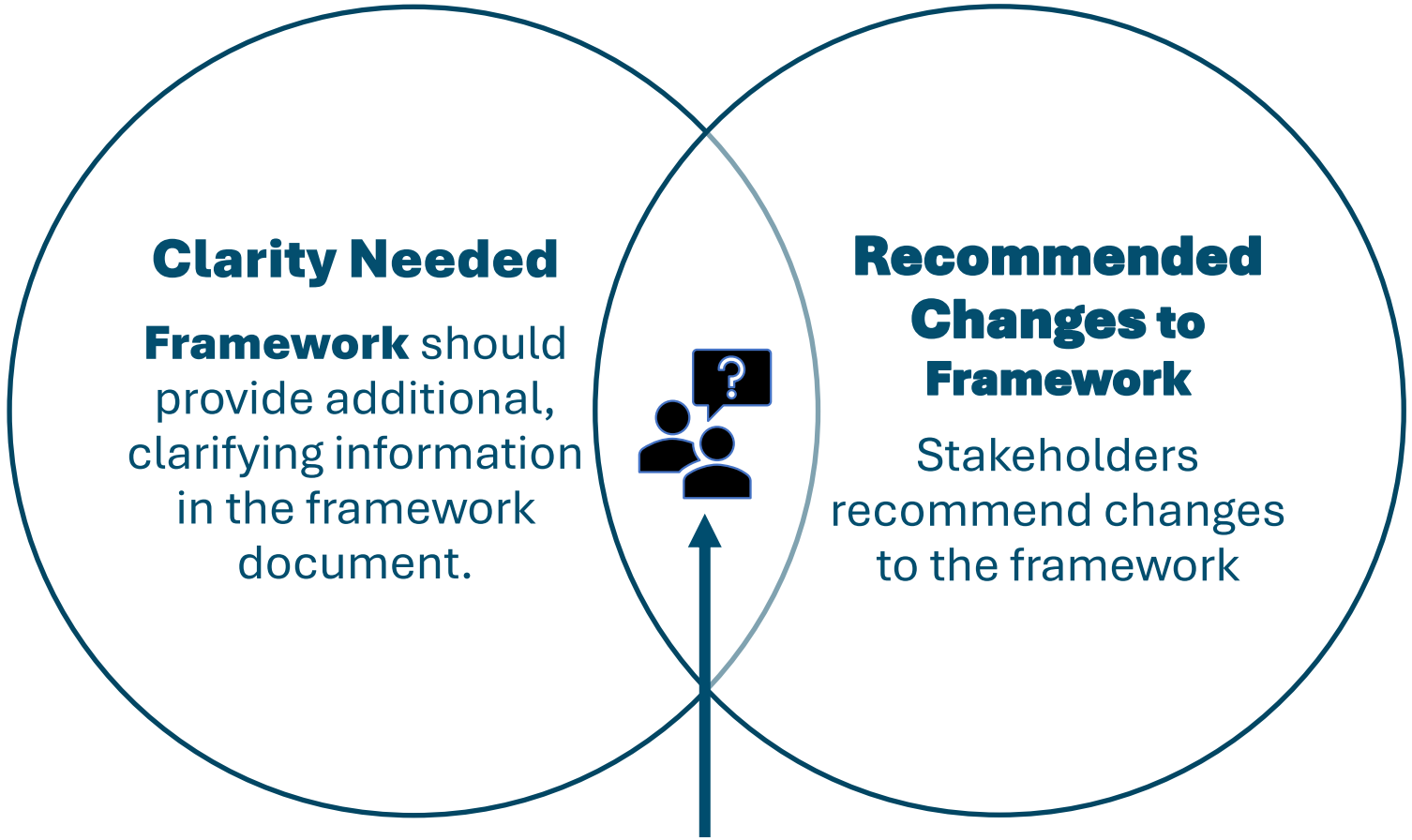


190 Unique Comments

Key Theme Areas

1. Project Identification – 27 comments
2. Benefit-Cost Analysis – 18 comments
3. Customer Engagement– 18 comments

Comments generally call for one of three types of responses:

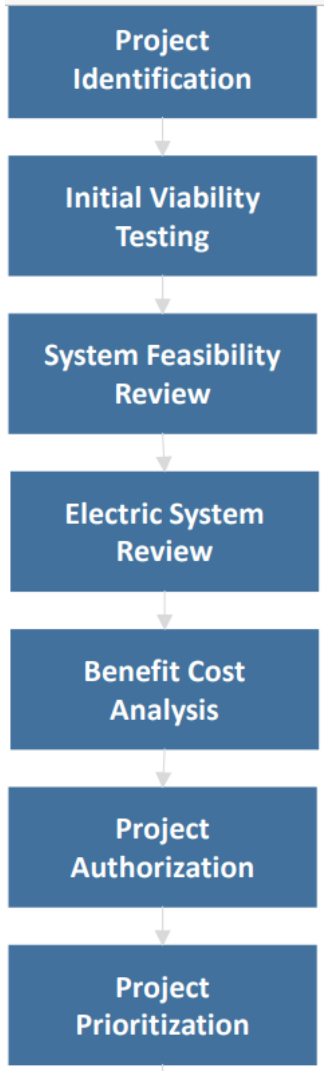


Broader Policy Comments that may be outside of Framework *(will be documented)*

Discussion between LDCs and stakeholders is needed to understand the comment and/or come to agreement, where possible

Discussion Topics

- Overarching Comments
- Project Identification
- Initial Viability Testing
- Gas System Feasibility
- Electric System Planning /Integrated Energy Planning (~20 minutes)
- Benefit Cost Analysis (~20 minutes)
- Project Prioritization
- Customer Engagement Plan
- Framework Update Process
- Budget/Cost Recovery

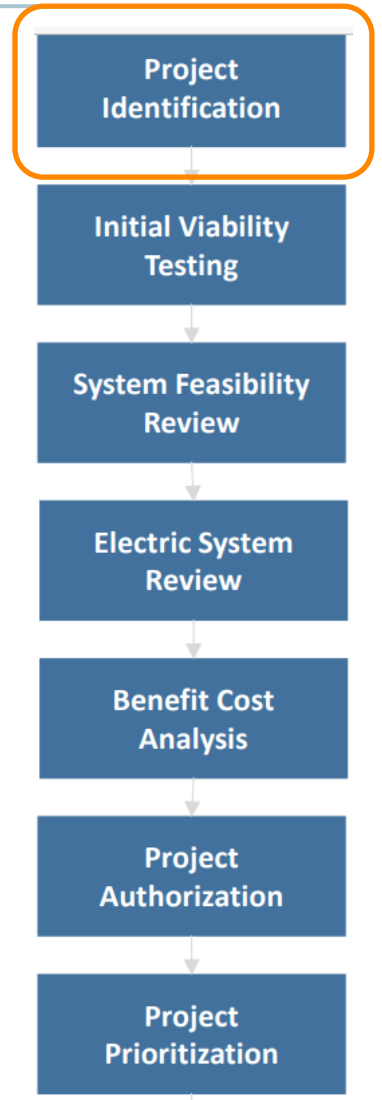


Overarching Comments

- **More information and examples are needed in multiple areas**
  - Key topics: BCAs, initial viability, feasibility, BCAs, prioritization and customer engagement
- **Many wanted more time to review clarifications and provide comments.**
- **Current framework's scope narrow; more system-level focus**
  - The framework approaches NPAs at a pipe-scale level, but many argue that the transition must be planned at the system and/or program level.
- **Public safety is very important**
- **Positive Feedback: Stakeholders noted the LDC efforts and thoughtful approach, the opportunity to provide feedback, and the framework's structure but believe further refinements are necessary.**
  - The decision-making hierarchy, review process, and prioritization steps are generally seen as positive aspects.

Project Identification

+ **Clarity and more information requested:**
  - Define new customer process, “Emergent” and “Other reliability”.
  - Provide case studies or examples to illustrate the selection process.
+ **Emergent and Other reliability - recommendation to not screen out these projects**
+ **Some interested in geographic planning rather than evaluating projects in isolation.**
  - *Is geographic focus about targeted electrification or for NPA?*
+ **Handling New Customer Requests**
  - Some stakeholders recommend that the framework should proactively encourage electrification for new customers.
  - There were many comments asking for clarification and details around the approach for new customers.
    - *Should Utilities provide details for their new customer request process?*
    - *Where do incentives for non-gas customers come from?*

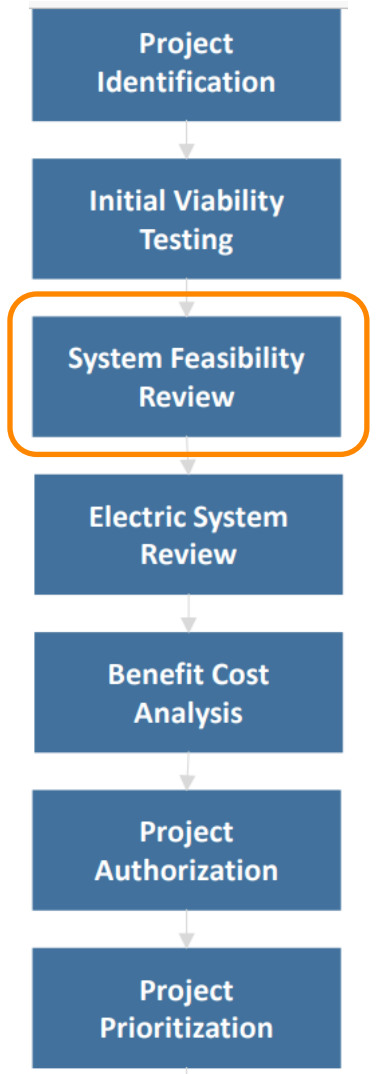


Initial Viability Testing

+ **Clarity and more information requested:**
  - More details needed in criteria for assessing viability
  - Requests for examples of how IVT will be applied and developed
  - How does viability interact with prioritization?
  - New customer requests are good NPA candidate but marked in viability as medium
+ **Add program-level screening for GSEP NPAs**
  - Why would a separate process be needed and applied?
+ **Concerns around eliminating a large majority of projects**
  - Request for more details around timeline, and cost thresholds
+ **Concerns that viability is LDC specific – prefer statewide**
  - Thoughts about prioritizing Variability vs flexibility?
+ **Gas planning timelines should adjust for NPAs**
  - Clarification – NPAs are proposed to align with the Capital Plan to avoid investment? What is the adjustment?

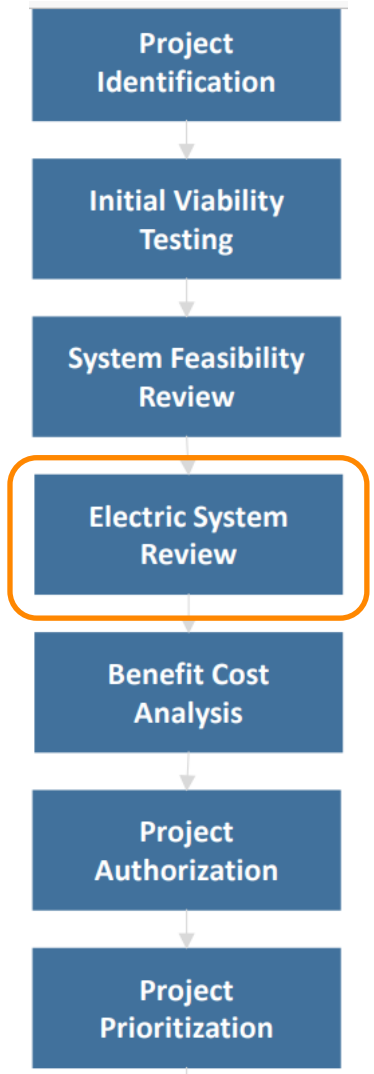
Gas System Feasibility Reviews

+ **Clarity and more information requested:**
  - Electric System Feasibility Review needs more information including if it's a screen, failure conditions and request for more transparency on the information
    - Many more comments on electric than gas system feasibility
+ **NPAs should use reduced gas flow assumptions to align with long-term climate goals.**
  - Seeking clarification here on this recommendation and its overlap with system planning (actual vs real)
  - Consistent with forecast and supply plan practices?
  - Are there concerns with BCA impact from expanding the scope (less infrastructure)
  - Also, concerns with solutions impacting hydraulic feasibility?
+ **Gas system feasibility should not automatically disqualify by electrification-related grid upgrades**
  - IEP will help with this and allow more things to proceed and be aligned. More concerns?
+ **Costs for gas should not be compared against planned ESMP grid upgrades. (i.e. no double counting ESMP costs)**



Electric System Review and Holistic Planning

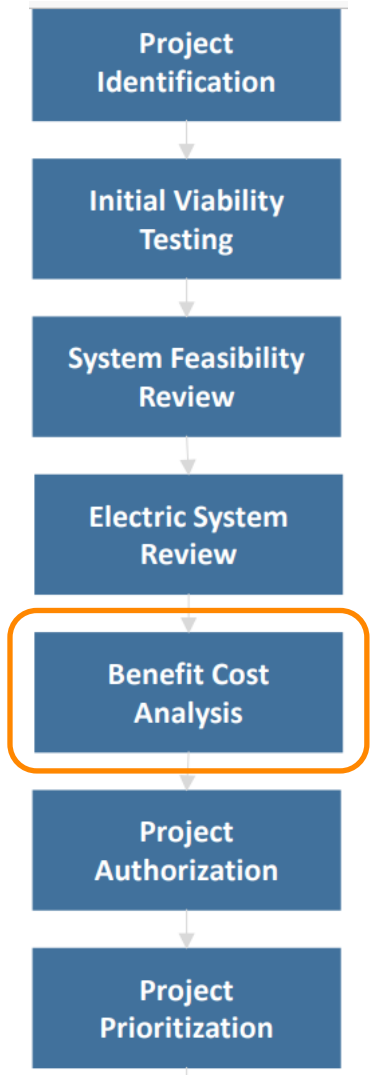
+ **Holistic Planning/Integrated Energy Planning (IEP)**
  - Substantial interest integrated energy planning, and particularly electric planning processes
    - Are recommendations for holistic planning short term, medium term, or longer term?
  - IEP process is outside the scope of the NPA framework; but comments will be provided
+ **Feedback on other, non-framework areas to enable more NPAs, including line-extension policies, obligation to serve, and GSEP**
    - Should the Utilities provide details in CCP?



"In addition to the NPA process (which will have some value, but is ultimately unlikely to make a material contribution to achieving the Commonwealth's climate goals), a fundamentally reformed, more ambitious Integrated (Building) Energy Planning process is needed. That IEP process must promote electrifying and decarbonizing the building thermal sector at a pace that will achieve the Commonwealth's climate goals, and organizing it so as to avoid additional gas capital investments wherever possible, to substantially reduce overall costs." - Stakeholder

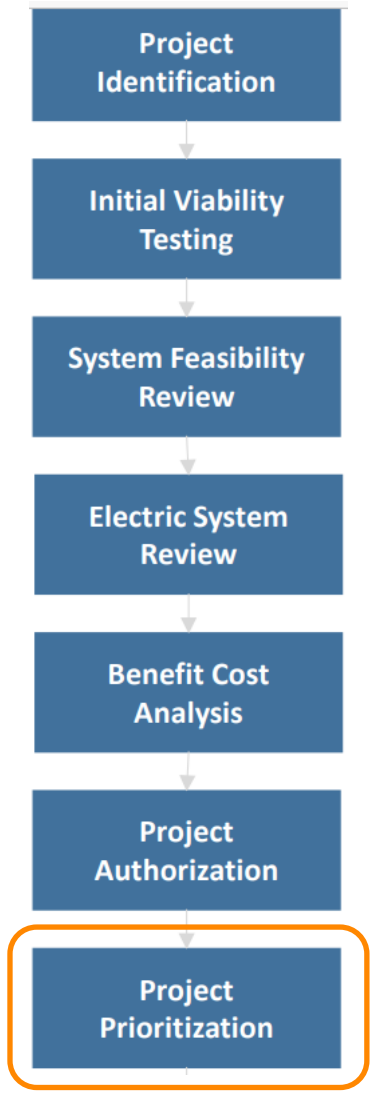
Benefit Cost Analysis

+ **Clarity and more information requested:**
  - Multiple stakeholders requested examples
  - Clarify thresholds and when something would move forward when BC<1
  - Clarify factors in each test (e.g., safety, resilience, security, health impacts, equity impacts)
  - Relationship between BCA and prioritization
+ **General support for TRC, including social cost of carbon and EJ benefits**
+ **Multiple concerns about gas RIM, including lost gas revenue as a cost**
  - Do stakeholders seek other cost protections for gas system other than gas RIM?
  - Are stakeholders concerned that gas RIM will be used to limit NPA projects?
    - Would more scrutiny be useful?
+ **Mixed feedback on whether 4 tests is a pro or con (flexibility or complexity?)**



Project Prioritization

- **Staff/Utility resources shouldn't constrain NPAs (Money, permits, crews are finite resources)**
  - What does this imply for NPA budgets and relative benefits?
- **Mixed feedback on ranking of priorities 1, 2 and 3 and whether this will constrain cost-effective NPAs**
  - Discussion: What are the goals/outcomes of NPAs that should be prioritized? Does the order matter?
- **Stakeholders have provided feedback to prioritize EJ communities, but some flagged that the proposed approach may not be sufficiently nuanced.**
  - How should the framework prioritize EJ communities, if not the proposed approach?



Framework Update Process

- **Stakeholders want framework updated more frequently than 5 years from now (range of every 6 months to 2 years initially).**
  - Request for working group for that process and reporting/lessons learned.
  - Is the update more focused on the framework or the implementation of NPAs?
- **Stakeholders requested clarity of reporting on during NPA implementation and project completion for future lessons learned.**

Customer Engagement

+ **Clarity and more information requested:**
  - More detail and information and stakeholder review of customer engagement
  - Should include timing of customer engagement in framework
+ **Customer Engagement Plan (CEP): Critical for success, once an NPA is selected**
  - CEP is in implementation stage; discussion on timing and approach to CEP development and review.
  - What are most important aspects of the customer engagement plan? (e.g., holdouts)
+ **Concerns about addressing "Holdout" Customers**
  - Avoiding "one non-participating customer" who can prevent an entire NPA project from moving forward.
  - Suggested solutions: municipal/community engagement strategies or allowing mixed-fuel solutions. Others?

Cost Recovery

+ **Cost recovery requested to be included in the framework discussion**
  - Specific recommendations?
  - Should projects be considered innovation?

Next Steps

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Next Steps

+ **Next meeting will March 5th**
  - 10:00 AM-2:00 PM at 75 State Street
+ **Stakeholders to provide any modifications to comment matrix by February 10th**
+ **Expected topics for March 5th WG Meeting**
  - Review of stakeholder feedback on Community Engagement Findings
    - Due from stakeholders by **February 14th**
  - LDC presentation of the framework to be filed with the D.P.U.
  - Let us know by February 14th if you would like to present (2-3 slides) at next WG meeting
+ **Technical Subcommittee**
  - Technical Subcommittee Feb 11th – let us know if any questions
+ **Materials**
  - All of today's materials will be posted to the working group website (https://npaworkinggroup.com/)

Feedback from Today?

- Email us at: npaworkinggroup@apexanalyticsllc.com (We will assume internal/informal feedback; specify if you prefer public posting)

- Formal, Public Comment: Submit written comments on https://npaworkinggroup.com/ through contact us at bottom of page

Appendix- Draft Framework

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NPA Framework

January 15, 2025

BERKSHIRE GAS
An AVANGRID Company

EVERSOURCE

Liberty

nationalgrid

Unitil

Agenda

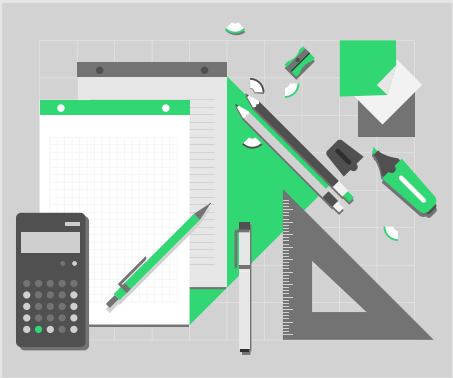
1. NPA Identification Process
2. Customer Education, Engagement and Commitment
3. Impacts to Project Implementation
4. Framework Updating

NPA Identification Process

BERKSHIRE GAS An AVANGRID Company
EVERSOURCE
Liberty
nationalgrid
Unitil

NPA Identification Process

- Project Identification
- Initial Viability Testing
- System Feasibility Review
- Electric System Review
- Benefit Cost Analysis
- Project Authorization
- Project Prioritization
- Project Execution



- Defines the Step-by-Step process which the Companies will use to identify likely NPA Candidates
- Each step in the NPA Identification Process is accompanied with requirements the Companies must fulfill when reviewing their projects
- Ensures optimal use of resources by avoiding time and resource expenditures for projects that are not high likelihood candidates

Project Identification (1/4)

- **Project Identification**
- Initial Viability Testing
- System Feasibility Review
- Electric System Review
- Benefit Cost Analysis
- Project Authorization
- Project Prioritization
- Project Execution

The Companies shall initiate the NPA Identification Process as defined in this NPA Framework for all projects identified as requiring such review.

- Understanding which capital investments by the LDCs are suitable for NPA review and which are not is an essential first step in ensuring an efficient NPA Process.
- Not all program types are conducive to an NPA review.

Reference: Table 1a) Types of Capital Projects

Program	High Level Descriptions (may vary by LDC)	Part of NPA review
GSEP	Replacement of leak-prone infrastructure	**Yes**
Reliability - Capacity	Projects to increase the capacity of the system such as system reinforcements, new gate stations and new regulator stations	**Yes**
Reliability - Replacement	Replacement projects such as Low-Pressure Conversion and Flood Hardening Projects, MAOP Compliance	**Yes**
Gate Stations & Regulator Stations	Replacement of equipment in poor condition to improve system reliability	**Yes**
LNG/LPGA	Provide critical gas supply that supports the system	**Yes**
Resiliency	Projects that increase the overall ability of the natural gas system's ability to withstand and recover from significant disruptions such as natural disasters and extreme weather events	**Yes**
New Customer Request	New Customer services and main extensions	**Yes**
DOT/Municipal Relocations	Address gas main conflicts related to the state DOT or Municipal reconstruction	**Yes**
Master Meter Compliance	Replacement of customer owned piping beyond the meter set to bring it up to compliance	**Yes**
Emergent	Unplanned work that addresses immediate safety concerns	**No**
Other Reliability	Projects that support the gas system (Stub Cut-offs, Corrosion Control, Tools and Equipment, etc.)	**No**
Metering	Work on Residential and C&I meters (i.e., meter exchanges), improvements to complex meter installations	**No**
Facilities	Work to facilities such as fencing, building maintenance, painting, security.	**No**
Information Technology	Investments in IT equipment and systems such as those used for pressure regulation, gas dispatch, customer billing cybersecurity, etc.	**No**

Project Identification (2/4)

- Project Identification
- Initial Viability Testing
- System Feasibility Review
- Electric System Review
- Benefit Cost Analysis
- Project Authorization
- Project Prioritization
- Project Execution

The Companies shall initiate the NPA Identification Process as defined in this NPA Framework for all projects identified as requiring such review.

- Understanding which capital investments by the LDCs are suitable for NPA review and which are not is an essential first step in ensuring an efficient NPA Process.
- Not all program types are conducive to an NPA review.

Reference: Table 1b) Excluded Programs

Program	Reason for Exclusion	Part of NPA review
Emergent	Immediate action is required to maintain safe operation of the system. These projects require immediate action to maintain the safety and reliability of the gas system and therefore do not afford the time to conduct the NPA Identification Process.	**No**
Other Reliability	The work that is classified under this program may vary by company. In general, this is a bucket of work that does not fit into traditional programs but still maintains safety and reliability of the gas system. Projects like stub cut offs (which shorten stubs in the street) or corrosion control (which repairs and enhances the systems protecting steel pipelines) are vital to the system safety and not possible to replace with an NPA.	**No**
Metering	Metering involves meter purchases and replacements on the gas system for both residential and C&I customers. Most of the work in this program is to comply with statutory obligations to replace gas meters every 7 years. This program is not suitable for NPA review as the work is required compliance, date driven by individual location, identified at a program level rather than at a project level and is low cost compared to other programs.	**No**
Facilities	The work to repair aging facilities, enhance security and general maintenance of facilities (such as painting or roof repairs) is minor work that is not directly related to pipeline infrastructure and is not suitable for NPA review.	**No**
Information Technology	This work involves software purchases, updates, work on telemetry and helps the overall safety and functionality of the system. This program is used to make purchases and upgrades that keep the system operating, allowing the Company identify issues and maintain a reliability service.	**No**

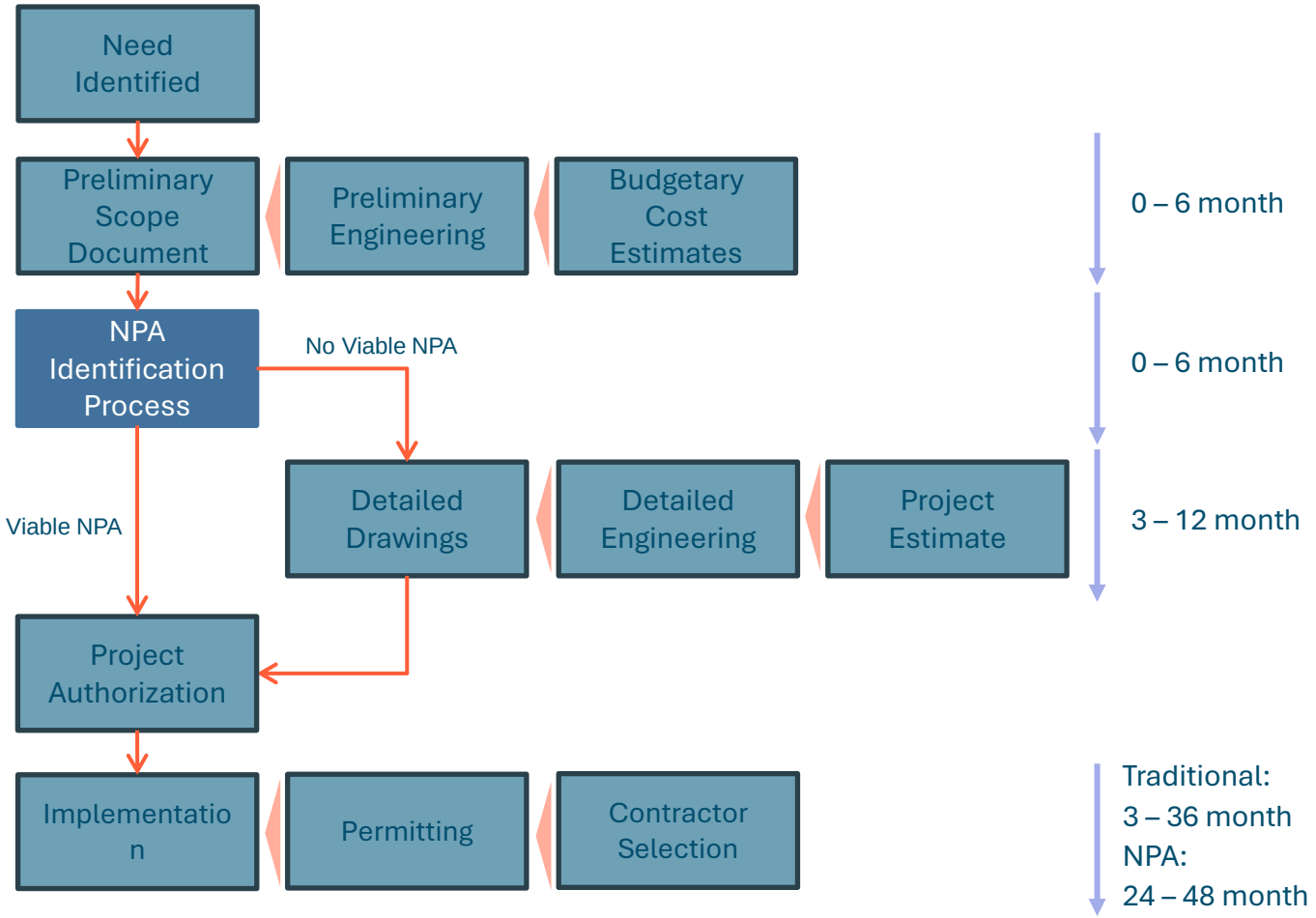
Total project volume in excluded programs represents a very small percentage of work and dollars (varying by LDC and year) of the annual capital plan

Project Identification (3/4)

- **Project Identification**
- Initial Viability Testing
- System Feasibility Review
- Electric System Review
- Benefit Cost Analysis
- Project Authorization
- Project Prioritization
- Project Execution

The Companies shall initiate the NPA Identification Process as defined in this NPA Framework for all projects identified as requiring such review.

- Long-term plans are a long-range outlook on system needs.
- Individual projects are developed in consideration with site-specific and system-specific conditions to advance the long-term plans.
- Long-term and individual projects are assessed at regular intervals.
  - Typically, yearly during capital budget development.
- Where possible, each LDC shall incorporate consideration of NPAs and NPA assessments into its long-term system planning and goal development.



Timelines highly dependent on project type and size and experience with the NPA Process

Project Identification (4/4)

- **Project Identification**
- Initial Viability Testing
- System Feasibility Review
- Electric System Review
- Benefit Cost Analysis
- Project Authorization
- Project Prioritization
- Project Execution

The Companies shall initiate the NPA Identification Process as defined in this NPA Framework for all projects identified as requiring such review.

The Companies shall review viable NPA candidates with the following NPA technologies and solutions, or combination of solutions, as defined in Table 2 and provide results of said evaluation.

- The NPA Identification Process will consider a wide array of NPA technologies and solutions, depending on the program type.
- The LDCs will review the viable NPA candidates with the following technologies and measures:
  - **Electrification such as Air Source or Ground Source Heating Pump**
  - **Thermal Network Systems**
  - **Energy Efficiency & Demand Response**
  - **Behavior Change and Market Transformation**
  - **Supply Side Solutions**
- The Companies will also evaluate any combination of technologies listed
- Technologies and solutions will be updated with the Framework as they evolve

ronmental Economics

Reference: Table 2) NPA Technologies and Solutions

Program	Electrification	Thermal Network Systems	Energy Efficiency & Demand Response	Behavior Change and Market Trans-formation	Supply Side Solution	Asset Rehabilitation	Traditional Gas System Investment
GSEP	✓	✓	NA	NA	NA	✓	✓
Reliability - Capacity	✓	✓	✓	✓	✓	✓	✓
Reliability - Replacement	✓	✓	NA	NA	NA	✓	✓
Gate & Regulator Stations	✓	✓	✓	✓	✓	✓	✓
LNG/LPGA	✓	✓	✓	✓	✓	✓	✓
Resiliency	✓	✓	NA	NA	NA	NA	✓
New Customer Request	✓	✓	NA	NA	NA	NA	✓
DOT/Municipal Relocations	✓	✓	NA	NA	NA	NA	✓
Master Meter Compliance	✓	✓	NA	NA	NA	NA	✓

Initial Viability Testing (1/2)

- Project Identification ✓
- **Initial Viability Testing**
- System Feasibility Review
- Electric System Review
- Benefit Cost Analysis
- Project Authorization
- Project Prioritization
- Project Execution

All projects within the applicable programs will be run through an initial viability test to evaluate if projects are viable NPAs candidates.

- The LDCs shall proactively identify and evaluate projects to increase the likelihood of identifying viable NPAs.
- Testing is based on a variety of factors, including:
  - The safety and reliability concerns tied to the project
  - Timing of project need
  - Customer composition
  - Total project cost relative to customers impacted

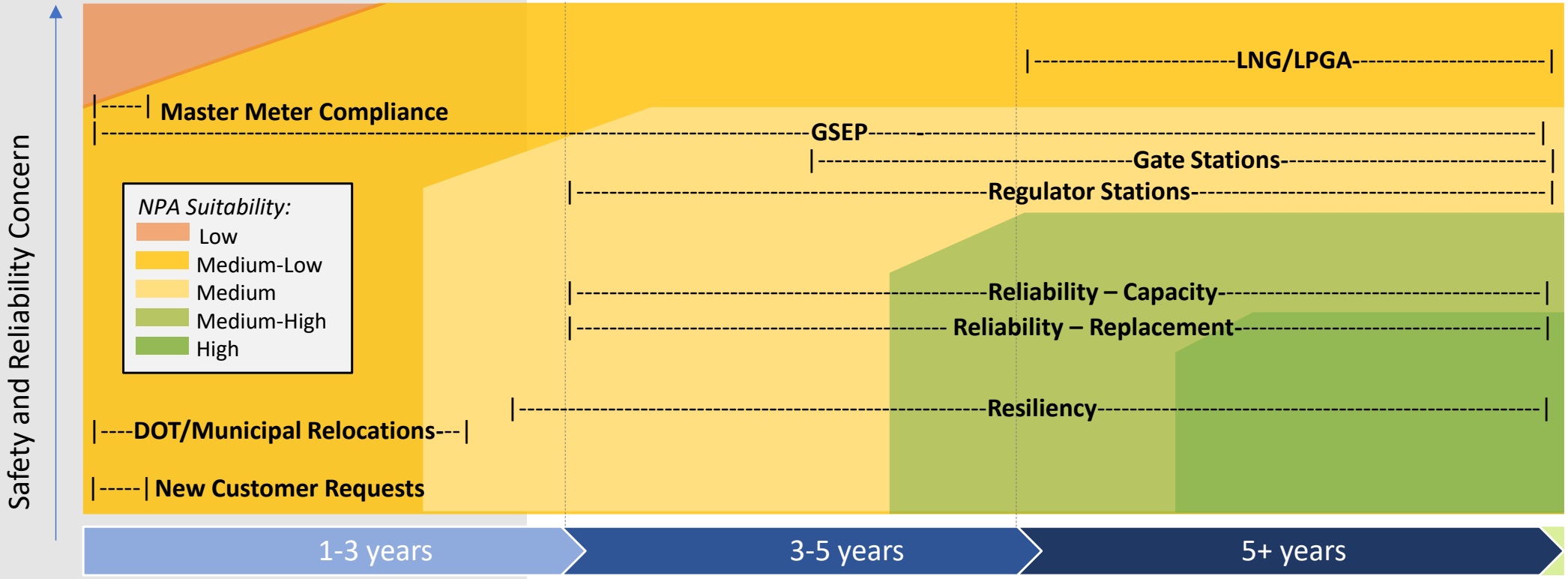
- Each LDC will propose certain thresholds to assist in identifying appropriate candidates with a high likelihood of success and ensure those are prioritized.
- The LDCs will provide their Initial Viability Testing Criteria as they evolve based on experiences gained as part of cost recovery filings to provide the Department with an avenue to continuously evaluate the Companies' Initial Viability Testing Criteria.

Initial Viability Testing (2/2)

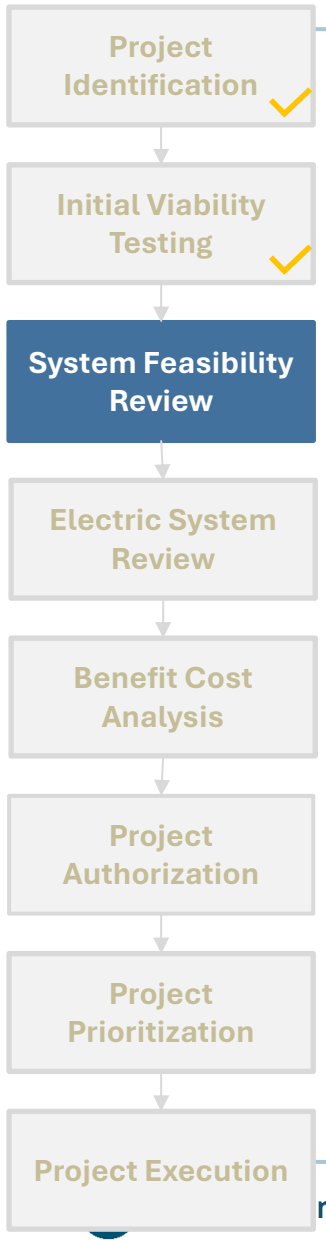
- Project Identification ✓
- **Initial Viability Testing**
- System Feasibility Review
- Electric System Review
- Benefit Cost Analysis
- Project Authorization
- Project Prioritization
- Project Execution

All projects within the applicable programs will be run through an initial viability test to evaluate if projects are viable NPAs candidates.

- Certain programs (and projects within programs) will show a higher success rate for NPA development than others.
- The NPA Opportunity Matrix suggests how each program fits within the NPA Suitability Score specifically to impacts of timing and safety and reliability concerns.



System Feasibility Review



Gas System Integrity Review

For all projects which pass the Initial Viability Testing, the Companies shall produce a System Integrity Review. LDCs may also conduct a Customer Viability review following the Gas System Integrity review to gauge the likelihood that customers would be willing and able to electrify.

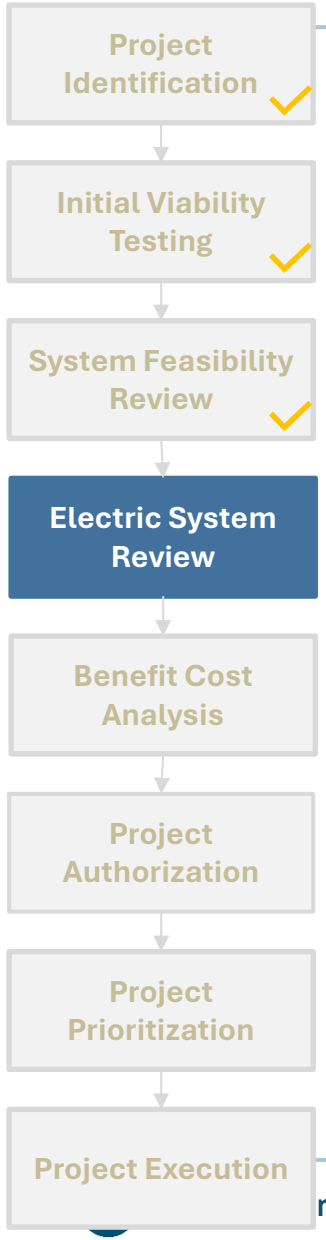
- The objective of this review is to determine if the gas system can function safely without the investment the NPA is looking to displace.
- This review may include an analysis using a hydraulic model to simulate system flow on the highest demand days and show the impact that decommissioning or not replacing a segment will have on the overall system. This step may include a re-scoping of the project area.

Step Zero Electric System Review

For all projects which pass the Gas System Integrity Review, the Companies shall work with the corresponding electric distribution system operators to attain a Step Zero Electric System Review.

- This review is to determine if the electric system can safely and reliably serve the additional load, and the level of investment needed (Step Zero Review).
- These Step Zero Reviews are developed by the electric distribution system operators and will provide the LDC with information on required system investments and timelines to completion of said investments.

Electric System Review



For every project which passes the system feasibility review, the Companies shall request an Electric System Impact Assessment from the relevant electric distribution system operators. This electrification impact assessment shall include, at a minimum, cost and timing estimates for any required electric system upgrades.

- The LDCs will engage the electric distribution system operators to review load increases as a result of an NPA solution as required by the Step Zero Electric Analysis
- The system impact assessment will also include cost and timing estimates for any required electric upgrades.
- Customer and system data must be provided to the electric distribution system operators for them to do a system impact assessment.*
- The electric distribution system operators will provide the electric rate impact test (eRIM) as part of the BCA.

*__Note__: The LDC may only provide information to the electric distribution system operators which is covered by the Data Waiver the Companies have requested from the Department, an NDA is signed by the electric distribution system operators in question, or the information is generally publicly available. Data Waiver pending Department approval.

Benefit Cost Analysis (1/2)

- Project Identification ✓
- Initial Viability Testing ✓
- System Feasibility Review ✓
- Electric System Review ✓
- **Benefit Cost Analysis**
- Project Authorization
- Project Prioritization
- Project Execution

- The Department's Order directs the Companies to conduct a benefit cost analysis (BCA) to evaluate NPAs. D.P.U. 20-80-B, at 98 n.66.

For every project which passes the initial viability test and the Electric System Impact Assessment, the Companies shall furnish a BCA that includes one or more of the following tests as appropriate - a gas and electric rate impact measure (RIM), a participant cost test (PCT), and a total resource cost test (TRC). For the TRC, the Companies shall use the most currently approved TRC in the 3-year Energy Efficiency Plan with all applicable values.

Participant Cost Test

Cost	Benefit
Behind the Meter Costs such as heating systems, appliances, weatherization, electrical upgrades	Funding availability through the state's EE program
Increase in electric energy bills	Federal and other non-EE related incentives, tax benefits, grants, or funding opportunities
	Behind the Meter investment
	Electric rate subsidies made available through the NPA Project

Gas Rate Impact Measure

Cost	Benefit
Lost Revenue from electrified customers	Avoided revenue requirements stemming from the avoided capital investments.
Remaining Capital Investments and the resulting net present value revenue requirements.	Avoided gas supply cost through a demand-reduction induced price effect (DRIPE)

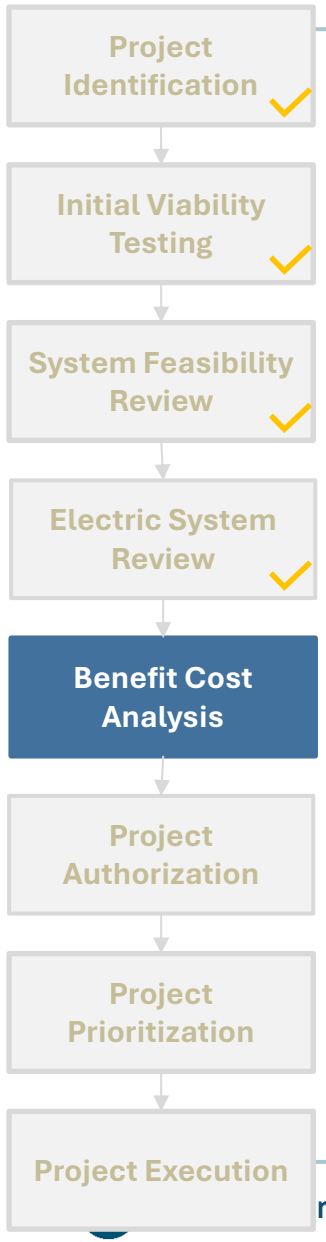
Electric Rate Impact

Cost	Benefit
Net present value revenue requirements from incremental capital investments	Increased electric revenues from electrified customers
Negative electric supply cost impact from reverse demand-reduction induced price effect (DRIPE)	

Total Resource Cost Test

Cost	Benefit
Project Implementation Cost	Electric Avoided Costs
Performance Incentive Costs	Gas Avoided Costs
Project Participation Cost	Delivered Fuel Avoided Costs
	Other Resource Benefits
	Non-Energy Impacts
	Social Cost of Carbon

Benefit Cost Analysis (2/2)



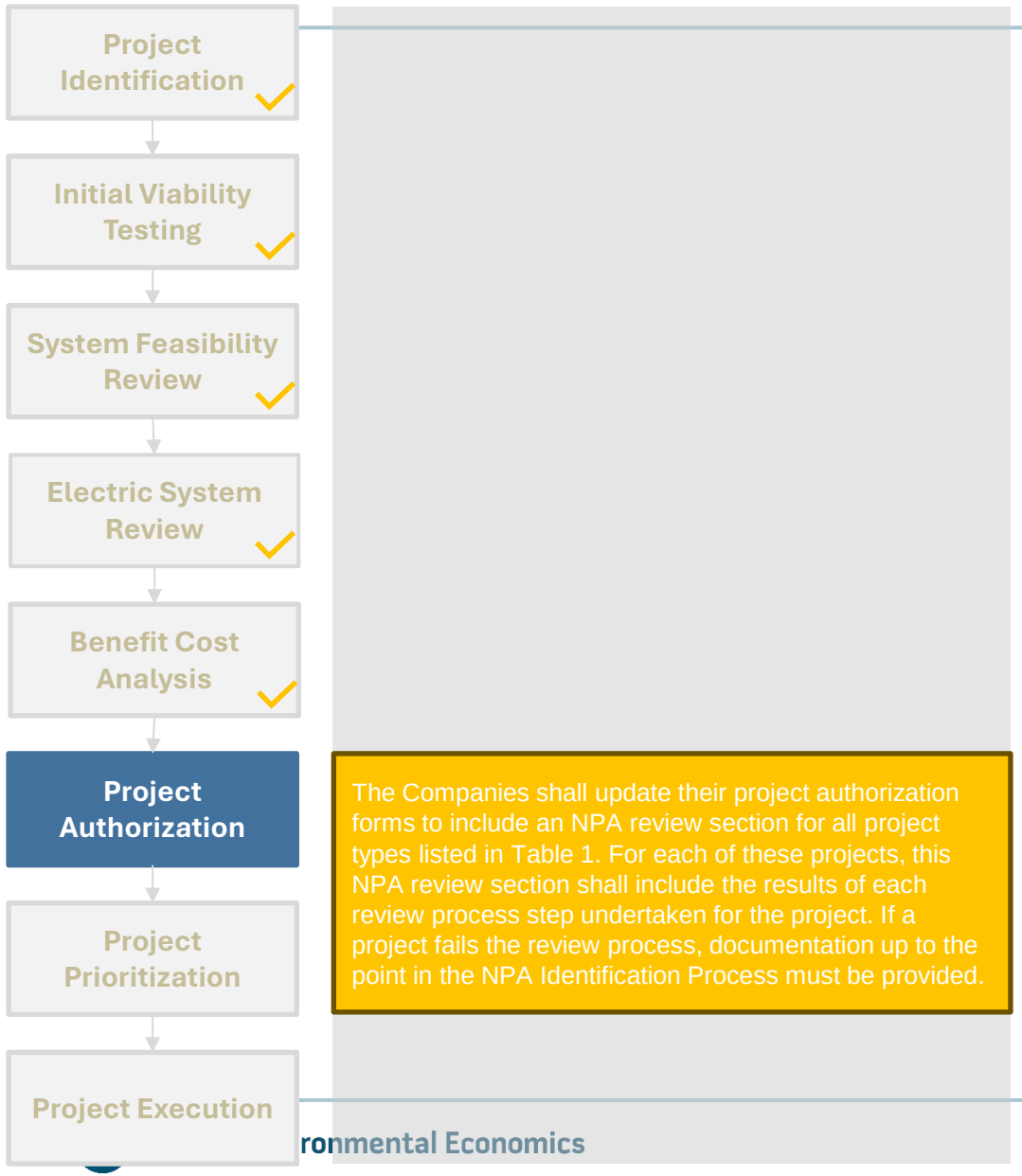
The Companies shall consider all funding sources for any NPA undergoing BCA evaluation, including reallocation of funds from different value streams within the NPA, so long as it does not turn any BCA negative.

Companies will pursue a viable, cost-effective NPA with the BCA tests ≥ 1. If the Companies proceed with an NPA which has failed one or more of the BCA tests, the Companies shall document sufficient evidence in support of their decision to proceed.

- The Companies may offer incremental funding for NPA Projects to help offset the costs for customers. These incremental funds, which may include grants and other outside funding, must be accounted for in the appropriate BCA.

- Companies will pursue a viable, cost-effective NPA. A cost-effective NPA is defined as an NPA with BCA tests ≥1. However, the Companies may also consider proceeding with an NPA if one or more BCAs are negative as long as the remaining BCAs are positive, the project is not cost-prohibitive, and other external circumstances make the NPA the more favorable option.

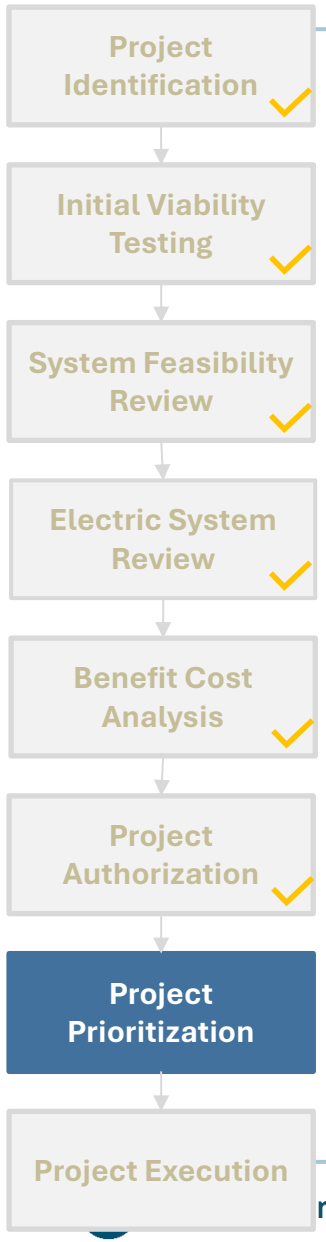
Project Authorization



The Companies shall update their project authorization forms to include an NPA review section for all project types listed in Table 1. For each of these projects, this NPA review section shall include the results of each review process step undertaken for the project. If a project fails the review process, documentation up to the point in the NPA Identification Process must be provided.

- All Companies have internal project authorization and approval processes which approve solution design and budget allocation to a specific project. These processes generally include a documented Project Authorization Form which outlines the need, impact of the need, the preferred solution, and all alternatives considered.
- The Companies will be updating these documentation and authorization process to include the NPA Identification Process and projects will only be able to proceed to implementation if they have provided sufficient evidence through the NPA Identification Process.

Project Prioritization



If NPA projects must be prioritized for execution, the Companies shall prioritize the projects by and in the order of their impact to EJCs, avoided GHG emissions, and avoided gas capital. Prioritization will also consider project need and timing, ability to execute, customer needs, and other factors that may impact project success, such as the need to coordinate with state or municipal work.

If more NPAs are identified than can be reasonably implemented in a specific timeline the Companies shall consider prioritizing their NPA projects in this order:

I. Projects in EJCs will be given highest priority.

II. Projects will then be prioritized based on their net avoided GHG emission reductions.

III. Projects will lastly be prioritized based on the amount of avoided capital on the LDCs system.

This prioritization ensures focus on NPA efforts in alignment with stated objectives and directives.

Prioritization should also take note of timeline needs, compliance obligations, state and municipal project coordination, and customer specific issues that may impact execution timeline

Project Execution

- Project Identification ✓
- Initial Viability Testing ✓
- System Feasibility Review ✓
- Electric System Review ✓
- Benefit Cost Analysis ✓
- Project Authorization ✓
- Project Prioritization ✓
- **Project Execution** → **Customer Engagement** → **Impacts to Project Implementation**

+Customer Education, Engagement and Commitment

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Customer Education, Engagement and Commitment

New Customers

Existing Customers

The Companies shall engage all new gas customer requests with alternative options and require each customer to sign the "Customer Acknowledgement" form that they have been informed and have chosen to proceed with gas or an NPA solution.

- Each LDC has implemented a process to educate prospective customers about alternatives to natural gas.
- The LDCs requests these potential customers examine alternative options prior to agreeing to new natural gas service.
- Customers are required to sign a "Customer Acknowledgement" form, acknowledging their awareness of non-gas options available to them and their decision to move forward with natural gas before the LDCs will proceed with the installation of a new gas service or additional gas equipment.
- Residential single service and small commercial service requests:
  - Provided with the form describing non-gas options. LDCs may make information available via links to MassSave or a company web page
- Residential subdivisions and large commercial and industrial customers:
  - Provided with the form and the LDC will discuss project-specific alternatives with these customers.

Customer Education, Engagement and Commitment

New Customers

Existing Customers

Each Company shall develop a Customer Engagement Framework informed through the targeted electrification pilots

- The success of implementing NPAs depends on customers exercising their choice to adopt an alternative energy option.
- LDCs have an obligation to provide safe and reliable service to their customers.
- The LDCs are committed to engaging with customers regarding the availability of NPAs which can avoid potential stranded investments while providing safe and reliable service to remaining customers at an affordable cost.
- Each LDC will develop a customer education, engagement and commitment process to ensure that customers have sufficient information available to make an informed decision to participate in the NPA project.
- Each LDC will work closely with its customer and energy efficiency teams to develop an engagement strategy which fits its customer base, geographic region and demographics best, while setting a specific priority on EJCs.
    - The LDCs intend to apply lessons learned from their upcoming Pilots to this process.
- LDCs expect to gain an understanding of customer reactions and concerns associated with full removal of natural gas service, as well as effective education strategies.

+ Impacts to Project Implementation

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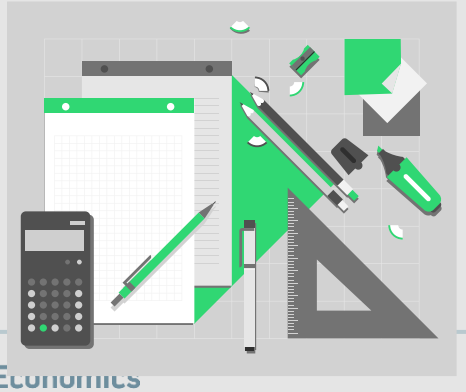
Impacts to Project Implementation

Non-Gas Customers

Changes in Project Viability

The Companies will only consider the natural gas customers within an NPA Service Area at time of project authorization.

- There will be customers, within a NPA Project area, that do not have natural gas service or have certain applications on delivered fuels.
- As part of an NPA, the LDCs will only consider these customers which are required to avoid the traditional gas investment.
- Incremental and project specific funding made available by the LDCs for an NPA Project will not be made available for non-gas applications.
- During the NPA implementation period, the LDCs would not be accepting new gas connections in the discrete NPA project area.

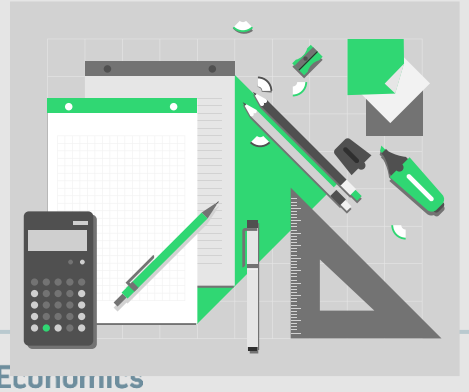


Impacts to Project Implementation

Non-Gas Customers

Changes in Project Viability

The Companies may evaluate the NPA in the event of emergent situations or changes in customer participation. The Companies shall make all necessary investments to deal with emergent situations where applicable without impacting the prudency review of the NPA decision.



- Unpredictable circumstances:
  - Emergent field conditions may force an LDC to make unplanned system investments
  - The required level of electrification to avoid the gas capital investment cannot be met due to changes in customer commitment

Circumstances	Examples	Cancellation Criteria
Company/Asset Condition	Emergency gas pipe issue	Requires new asset investment negating the economics of the NPA/BCA
	Estimated cost increases	Cost increases negates economics of the NPA/BCA
Customer Participation	Customer terminates their participation	Entire NPA scope cannot be completed; Company may choose to offer remaining customers option to electrify
	New property owner refuses to participate	

+ Framework Updating

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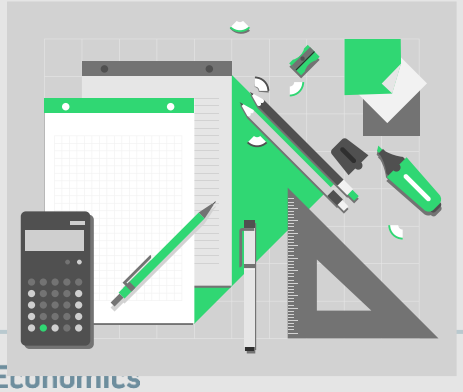
Framework Updates

Updates

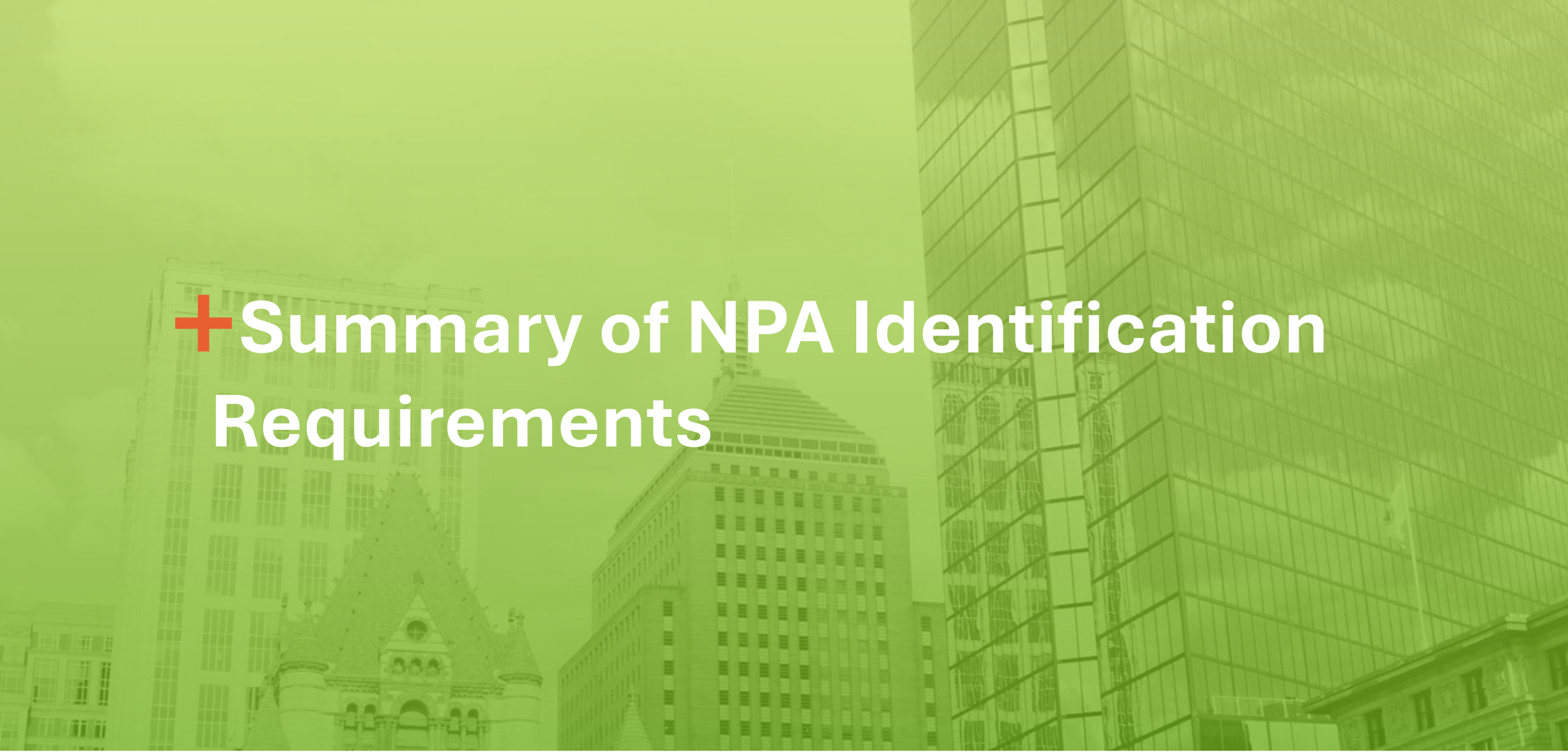
The Companies are required to update the NPA Framework at a minimum every 5-years and submit the updated version to the Department for review with each CCP filing. Specifically, the Companies shall provide updates on technologies and solutions which may act as NPAs, the BCA, and Community Engagement topics. The Companies shall solicit stakeholder feedback for each iteration it submits to the Department.

- Regular updates to the Framework as experiences are gained through the process.
- A specific update cycle will allow for consistency and the chance to make updates with lessons learned.



- The LDCs will provide an updated NPA Framework, if appropriate, through the CCP filing process.
- The LDCs will work with stakeholders to make updates.

Summary of NPA Identification Requirements



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Summary of NPA Identification Requirements (1-7)

Requirement Number	Requirement
1	The Companies shall initiate the NPA Identification Process as defined in this NPA Framework for all projects identified as requiring such review.
2	The Companies shall review viable NPA candidates with the following NPA technologies and solutions, or combination of solutions, as defined in Table 2 and provide results of said evaluation.
3	All projects within the applicable programs will be run through an initial viability test to evaluate if projects are viable NPAs candidates.
4	For all projects which pass the Initial Viability Testing, the Companies shall produce a System Integrity Review. LDCs may also conduct a Customer Viability review following the Gas System Integrity review to gauge the likelihood that customers would be willing and able to electrify.
5	For all projects which pass the Gas System Integrity Review, the Companies shall work with the corresponding electric distribution system operators to attain a Step Zero Electric System Review.
6	For every project which passes the system feasibility review, the Companies shall request an Electric System Impact Assessment from the relevant electric distribution system operators. This electrification impact assessment shall include, at a minimum, cost and timing estimates for any required electric system upgrades.
7	For every project which passes the initial viability test and the Electric System Impact Assessment, the Companies shall furnish a BCA that includes one or more of the following tests as appropriate - a gas and electric rate impact measure (RIM), a participant cost test (PCT), and a total resource cost test (TRC). For the TRC, the Companies shall use the most currently approved TRC in the 3-year Energy Efficiency Plan with all applicable values.

Summary of NPA Identification Requirements (8-16)

Requirement Number	Requirement
8	The Companies shall consider all funding sources for any NPA undergoing BCA evaluation, including reallocation of funds from different value streams within the NPA, so long as it does not turn any BCA negative.
9	Companies will pursue a viable, cost-effective NPA with the BCA tests ≥ 1. If the Companies proceed with an NPA which has failed one or more of the BCA tests, the Companies shall document sufficient evidence in support of their decision to proceed.
10	The Companies shall update their project authorization forms to include an NPA review section for all project types listed in Table 1. For each of these projects, this NPA review section shall include the results of each review process step undertaken for the project. If a project fails the review process, documentation up to the point in the NPA Identification Process must be provided.
11	If NPA projects must be prioritized for execution, the Companies shall prioritize the projects by and in the order of their impact to EJCs, avoided GHG emissions, and avoided gas capital. Prioritization will also consider project need and timing, ability to execute, customer needs, and other factors that may impact project success, such as the need to coordinate with state or municipal work.
12	The Companies shall engage all new gas customer requests with alternative options and require each customer to sign the “Customer Acknowledgement” form that they have been informed and have chosen to proceed with gas or an NPA solution.
13	Each Company shall develop a Customer Engagement Framework informed through the targeted electrification pilots
14	The Companies will only consider the natural gas customers within an NPA Service Area at time of project authorization.
15	The Companies may evaluate the NPA in the event of emergent situations or changes in customer participation. The Companies shall make all necessary investments to deal with emergent situations where applicable without impacting the prudency review of the NPA decision.
16	The Companies are required to update the NPA Framework at a minimum every 5-years and submit the updated version to the Department for review with each CCP filing. Specifically, the Companies shall provide updates on technologies and solutions which may act as NPAs, the BCA, and Community Engagement topics. The Companies shall solicit stakeholder feedback for each iteration it submits to the Department.

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