



# HAWAII GAS

THE CLEAN ENERGY COMPANY

## Hawaii Gas Bulk LNG

Kalaeloa Harbor Users

April 3, 2014

- Why Natural Gas (LNG)
- Guiding Principles
- Site Selection Requirements and Alternatives
- Barbers Point Harbor Overview

# Why natural gas (LNG) makes sense for Hawaii



- **Lower cost**
  - Fuel savings on Oahu estimated at 40-50% for power generation
- **Cleaner than petroleum**
  - Meets MATS & MACT requirements for power generation industry
  - Meets Emissions Control Area requirements for SOx and Nox in marine industry
- **Can be used by multiple sectors**
  - Electricity generation, ground and marine transport, direct use
- **Pipeline infrastructure already exists**
  - 1,000 miles of pipeline infrastructure
- **Complements use of intermittent renewable energy**
  - Assists in creating firm power through dispatchable power generation

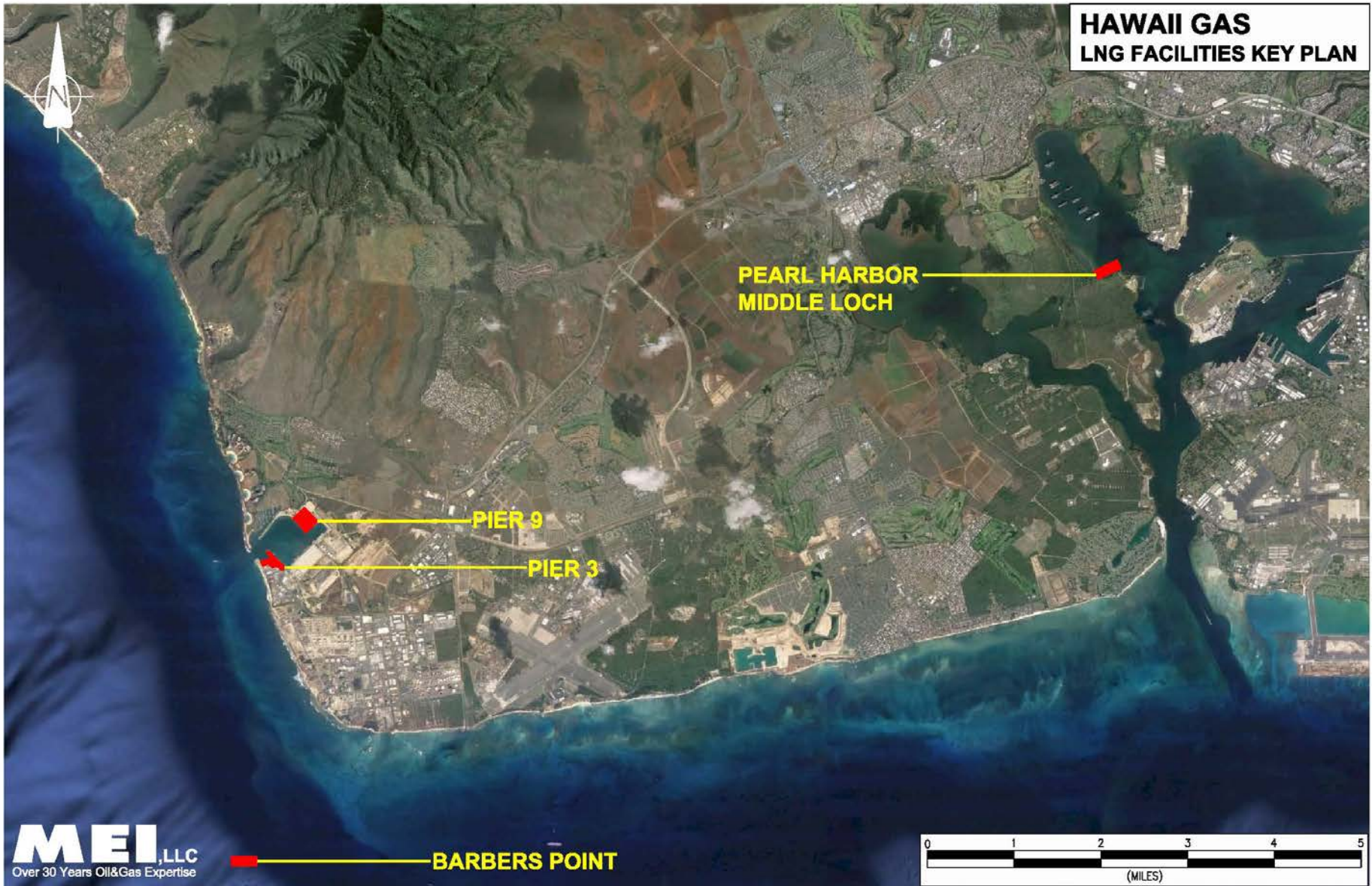
# Guiding principles for a bulk LNG solution



- Minimize impact to existing operations and infrastructure
- Minimize impact to environment
- Reduce energy costs
- Serve entire state and multiple industries
- Design in flexibility for changing demand
- Operate in a regulated framework for transparency
- Maximum reliability and security of supply
- Implement as soon as possible

- Bulk LNG site considerations
  - Shore-side marine terminal access to offload product
  - Impact to existing operations
  - Ability to permit and time to complete
  - Proximity to LNG storage
  - Compliance with FERC, USCG or PHMSA “control requirements”
  - Proximity to gas pipelines and users

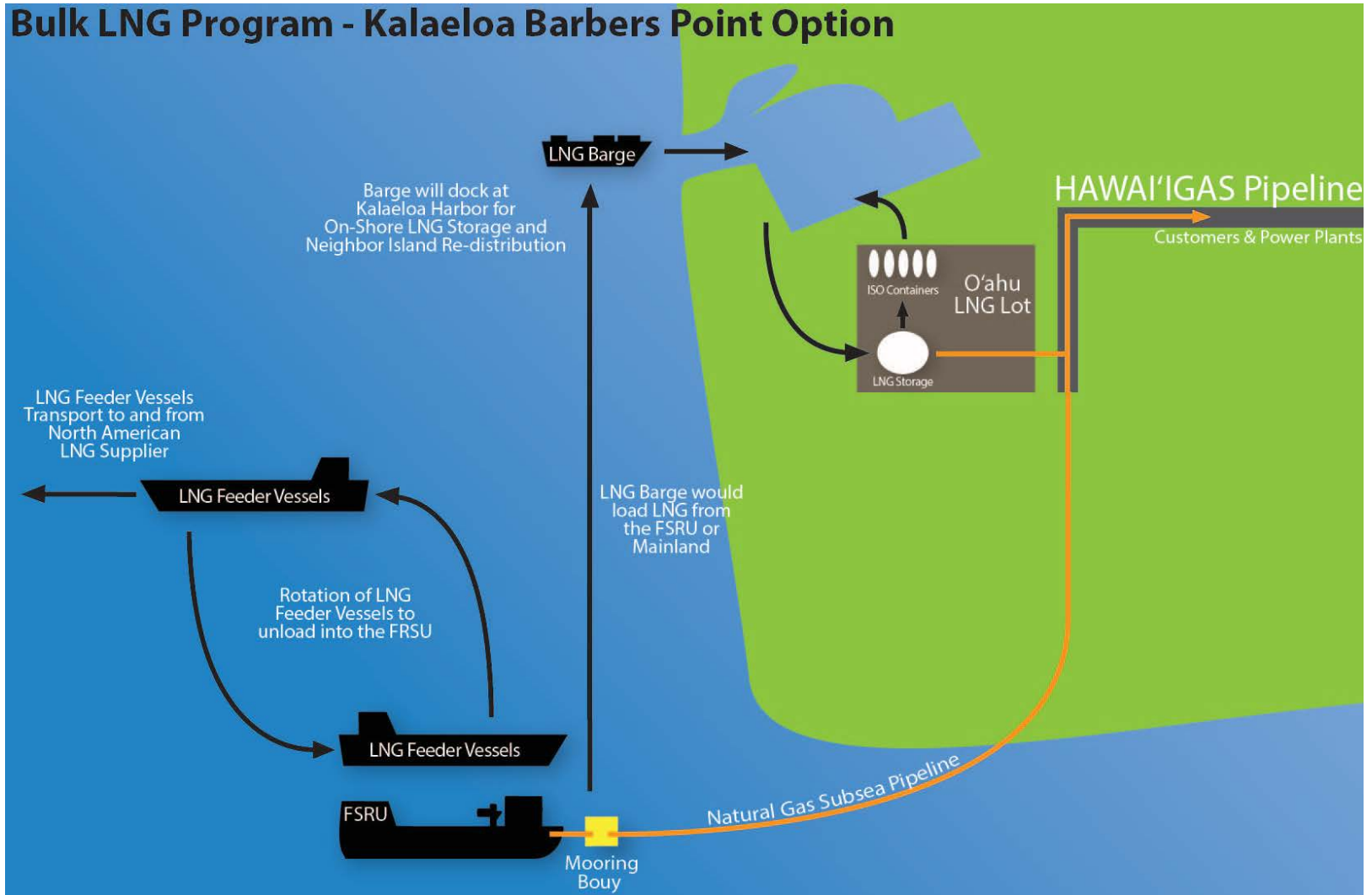
# Candidate site alternatives



<b>Elements</b>	<b>Bulk Terminal</b>
Initial operation	Starting 2019+
Purpose	Multi-island/multi-industry natural gas fuel supply
Supply logistics	LNG tanker or barge delivery into Barbers Point Harbor with ongoing ISO use for Neighbor Islands
Volume	0.8 – 1.2 million metric tons per annum (mtpa) 496 to 745 million gallons of LNG per year (gpy)
Infrastructure and Equipment	LNG terminal facility and distribution infrastructure
Storage	Oahu land based storage Floating Storage Regasification Unit (FSRU) 40 foot LNG ISO containers for distribution



## Bulk LNG Program - Kalaeloa Barbers Point Option



“While specific details and collaboration with HDOT Harbors Division, USCG Captain of the Port, and other port users would be needed, our preliminary assessment is that an LNG facility could be established at Pier 3 in concert with the KBPH Fuel Pier Project or at Pier 9”

- MEI/HDR



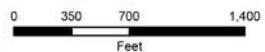
# KBPH Master Plan Layout & Harbor User Impacts

## KBPH Alternative 2 Energy Focus

Draft 3/20/2014  
For Internal Use Only

Land Use Category	Acres
Bulk A	90.7
Bulk B	46.4
Cargo Yard	58.8
Cargo Pier	4.5
LNG Terminal	25.2
LNG Pier	0.8
Fuel / LNG Terminal	11.9
Fuel / LNG Pier	1.6
Maritime Support Services	8.3
Maritime Support Pier	0.4
Roads	12.3
Harbor Operations	5.3
Conveyor System	0.9
Buffer / Open Space	17.4
Multi-Purpose Yard	8.6
Multi-Purpose Pier	0.6
Drainage	
KBPH Boundary	

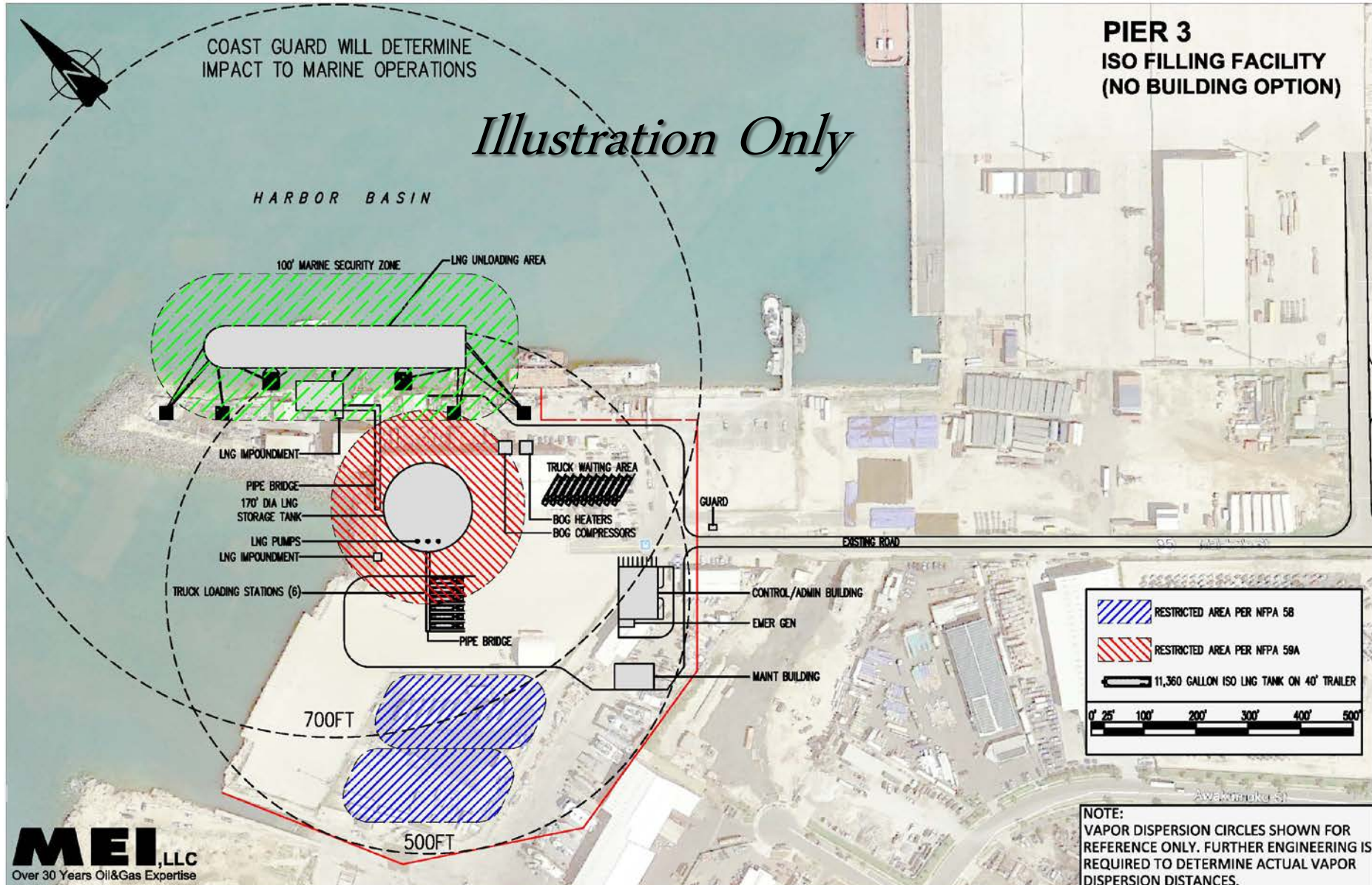
- Key Locations**
- Controlled Access
  - Dry Dock
  - Restricted Access
  - Weigh Station
  - Navigational Improvements



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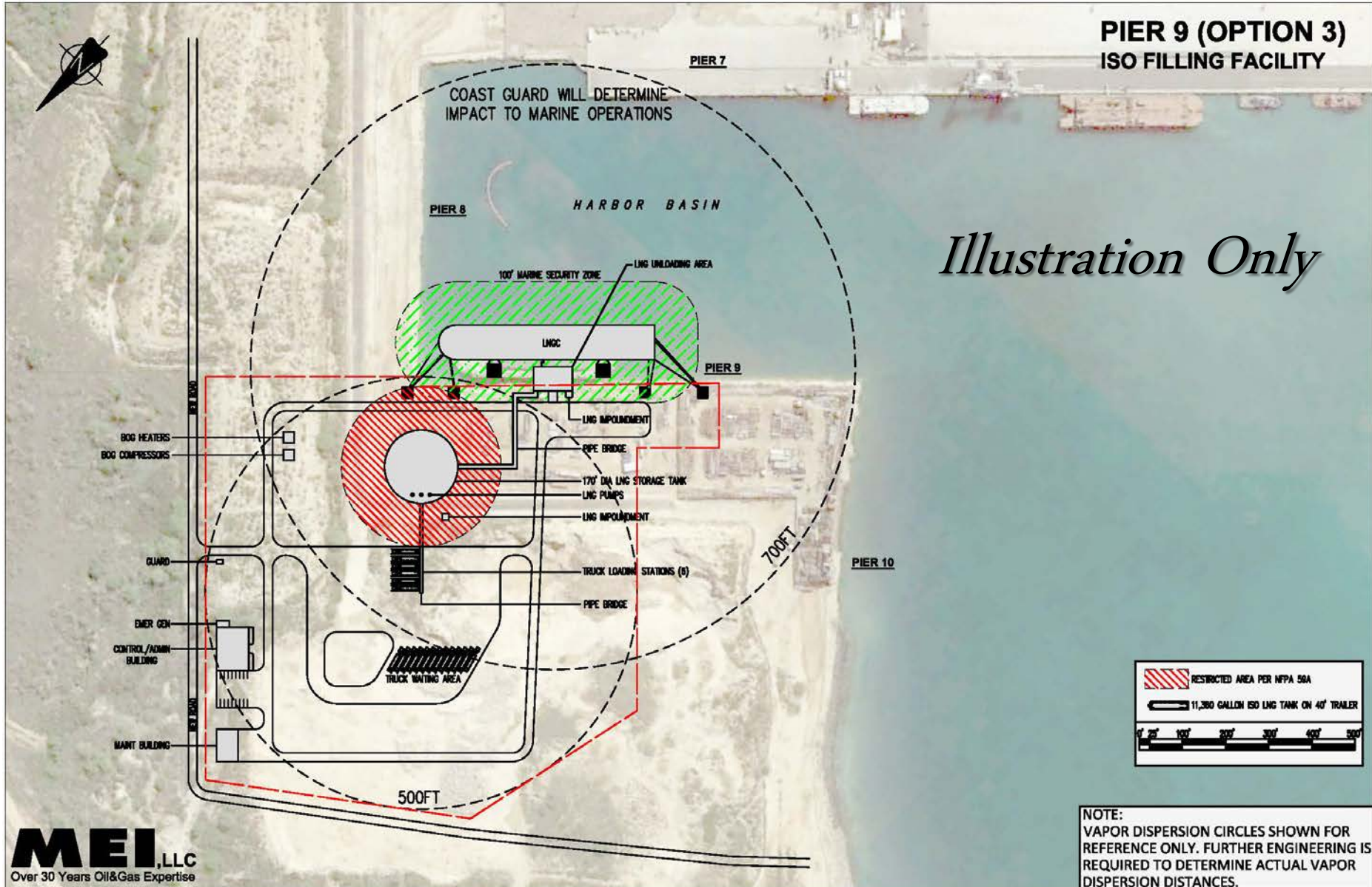


# Preliminary LNG Bulk Storage Layout KBPH Pier 3 – Option 1





# Conceptual LNG Bulk Storage Layout KBPH Pier 9 – Option 3



- Conduct further studies and continue to work with stakeholders to minimize impact at Barbers Point Harbor
- Continue to assess viability of other alternative sites
- Supply & logistics