Gas to Grid Interconnection

Biogas West Coast 2016

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SoCalGas
A Sempra Energy utility

SoCalGas Overview

- Southern California Gas Company (SoCalGas) has been delivering clean, safe and reliable natural gas to its customers for more than 140 years
- A regulated public utility that provides gas service to 20.9 million consumers
- Nation's largest natural gas distribution utility with 5.8 million meters

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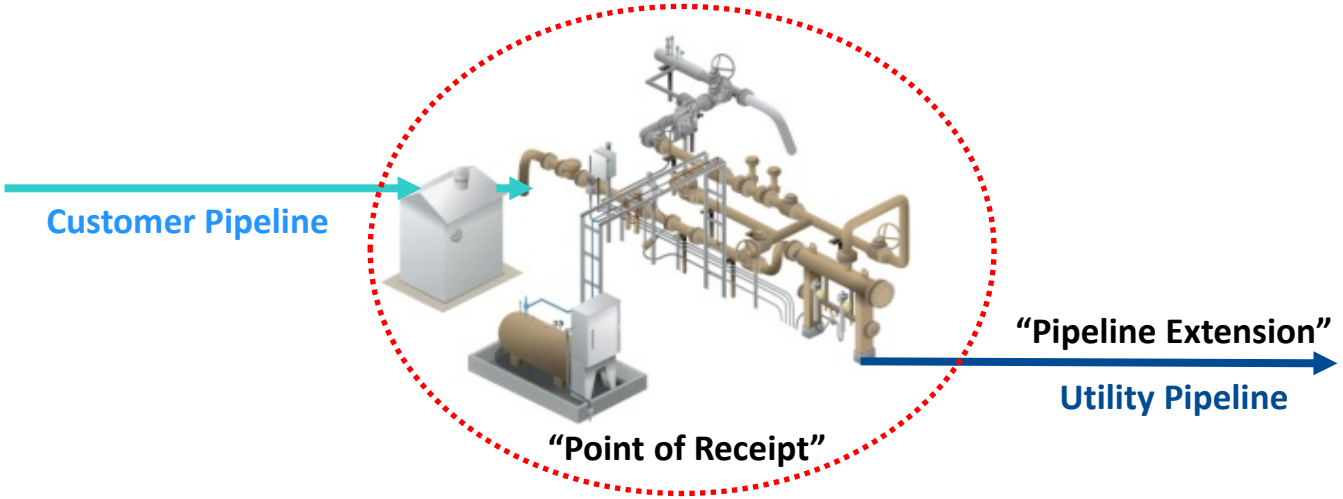
Interconnection: Overview of Components and Costs

Two Primary Components of the Term "Interconnection"



"Interconnection" = "Point of Receipt" + "Pipeline Extension"

Interconnection: "Point of Receipt" Costs

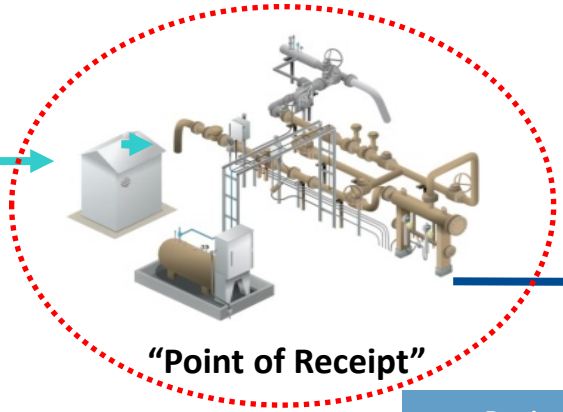
One Time Upfront Costs

A

"Point of Receipt"
Estimated at ~$1.2 to 1.9 million
(for delivery volumes ranging
from 1 MMscfd to 10 MMscfd)

B

One time pre-injection testing
costs as adopted by
D.14-01-03
Estimated at ~$14,000



Ongoing O&M for the Point of Receipt facility
Estimated at ~$3,500/month (~$42K/year)

Periodic testing as adopted by D.14-01-03
Estimated at ~$6K to $24K/year*
(depending on frequency – quarterly or annually)

C

Total Ongoing Cost = C + D

D

- Estimated costs assume testing for all 17 biogas constituents and includes the cost of the tests and associated labor

Note: All costs are fully loaded and Point of Receipt cost includes 35% Income Tax Component of Contributions and Advances (ITCCA)

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Interconnection: "Pipeline Extension" Costs

Location of Pipeline Extension is Key

Illustration 1 (curb and gutter):

- Cost to install pipe is much more expensive when:
  - Asphalt/concrete is cut
  - Traffic control is required
  - Night work is required
- Approximate cost range ~$200 to 300/foot*

Illustration 2 (no curb and gutter):

- Cost to install pipe is much less expensive when:
  - Asphalt/concrete does not need to be cut
  - Minimal traffic control
  - No work hour restrictions
- Approximate cost range ~$50 to 150/foot*

* Estimated Costs will greatly vary based on soil conditions, size of pipe, type of pipe (steel or plastic), trenching method, operating pressure of pipe, permitting requirements, etc.). Estimated prices do not include additional costs from Income Tax Component of Contributions and Advances (ITCCA).

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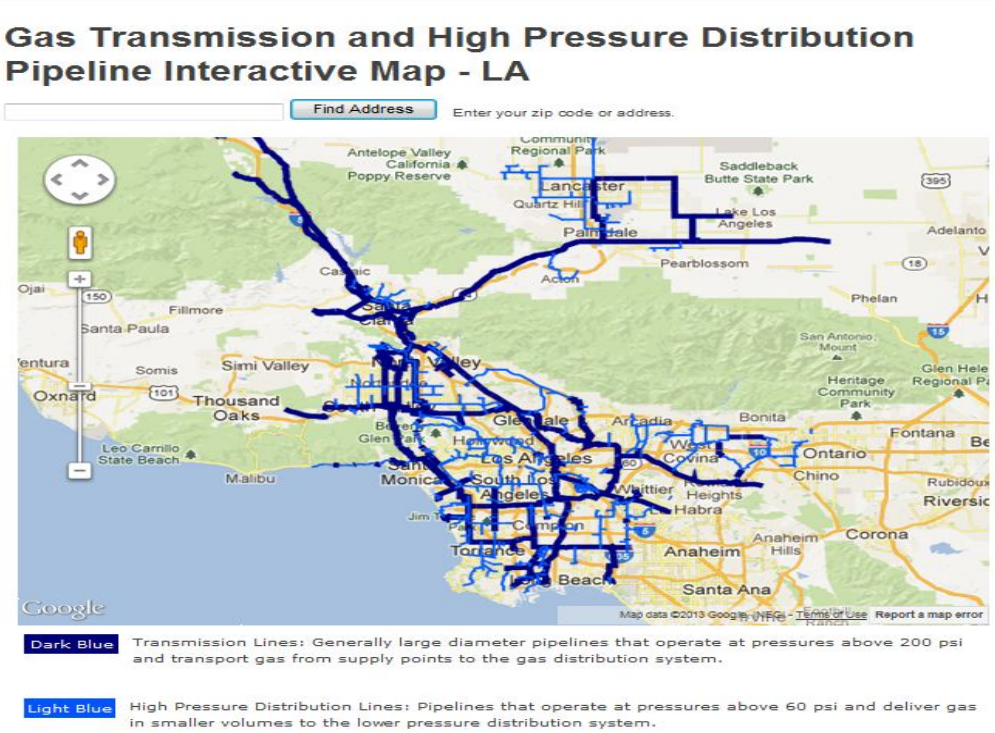
Five Step Approach to Interconnecting to SoCalGas Pipeline System

Step 1: High Level Utility Pipeline Assessment



- SoCalGas has an interactive webpage where the user can type in an address and it will show the nearest high pressure pipeline(s). **The map dose not show all high-pressure pipelines.**

  http://www.socalgas.com/safety/pipeline-maps/

- There is also a "National Pipeline Mapping System" that shows high pressure pipelines across the United States

  https://www.npms.phmsa.dot.gov/

- Contact the SoCalGas Market Development Team - Email: jlucas@semprautilities.com

Reminder: Existence of a gas line does not mean it has the necessary capacity!

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Step 2: SoCalGas Interconnection "Capacity Study" (Funded by Interconnector)

Interconnection Capacity Study - determines SoCalGas' takeaway capability to accept interconnector gas (and estimated cost to expand if necessary)

- Keep in mind:
  - Detail is important (e.g. – precise project location, volumes are critical)
  - Adjacent line to project doesn't guarantee injection acceptance
  - It is **very costly** to install pipelines in the public right of way

Biogas Producer
Location = X
Biomethane Volume = Y

Pipeline extension length of X feet with high level cost estimate of $X

Nearest SoCalGas pipeline that has the takeaway capacity to accept supply

Based on the high level results, is it economically viable to inject RNG into the utility pipeline?

Go ☑ **Stop** ☐

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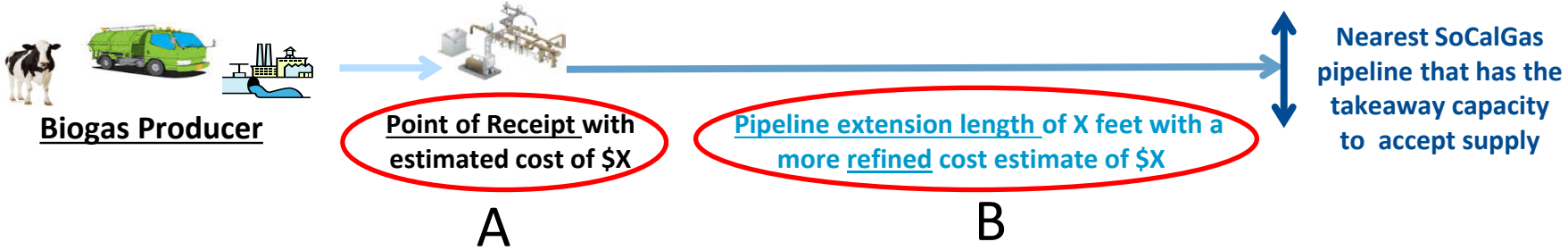
Steps 3 & 4: SoCalGas Interconnection "Engineering Studies" (Funded by Interconnector)

Step 3: Preliminary Engineering Study (PES) - more detailed study which includes cost estimate for Gas Quality Monitoring and Measurement Facilities (Point of Receipt)



Step 4: Detailed Engineering Study (DES) - describes all costs of construction, develop complete engineering construction drawings, and prepare all permit applications

- Design can be done by SoCalGas or Interconnector (under the supervision and guidance of SoCalGas)

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Step 5: SoCalGas Interconnection Authorization, Funding and Construction

Authorization and Funding of interconnection work

- Scope and cost depends on who performs the design and installation of interconnection facilities

Construction

- Construction can be done by SoCalGas or Interconnector (under the supervision and guidance of SoCalGas)

Reconciliation of Costs

- Interconnector is responsible for 100% of actual costs

A Few Keys to Ensure a Smooth Process

- Involve SoCalGas as early as possible, generally at least 18-24 months in advance of desired in service date
- Option to design/build generally works smoother if SoCalGas is elected to provide the design. Construction can be done by either SoCalGas or Interconnector

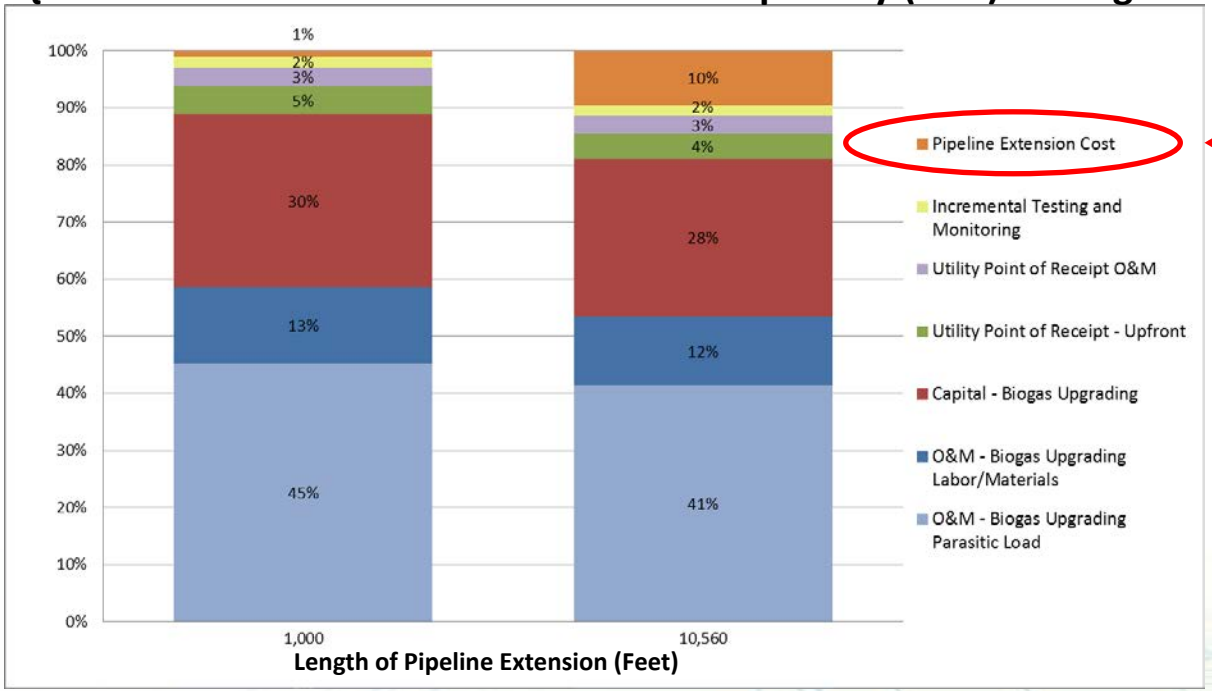
Incentive Program for RNG Interconnection Projects

CPUC Monetary Incentive for Eligible Biomethane Interconnectors

- Pursuant to D.15-06-029 (Biomethane OIR Phase II)
  - The monetary incentive is for 50% of the eligible interconnection costs incurred by a Biomethane Interconnector, up to $1.5 million
- AB 2313 (signed by Governor on 09/24/16) requires the PUC to modify the monetary incentive program approved in D.15-06-029 by:
  - Increasing the total incentives available for non-cluster biogas projects from $1.5 million to $3 million; and the total incentives for cluster projects (3 or more dairies in close proximity) shall be increased to $5 million
  - Extending the monetary incentive program from June 11, 2020 to December 31, 2021

Estimated Breakdown of Major Cost Components for Producing and Injecting RNG into the Pipeline

Estimated Breakdown of Lifecycle Costs to Inject RNG into the Pipeline
{based on 1.5 million standard cubic feet per day (scfd) of biogas for 15 years}



Location is Key!!

Breakdown includes interconnection subsidy of 50%, maximum of $3.0 million per project

1) Pipeline Extension costs are based on installing pipeline in urban location
2) Estimated costs assume testing for all 17 biogas constituents and includes the cost of the tests and associated labor

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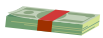
Overview of SoCalGas Biogas Conditioning/Upgrading Services (BCS) Tariff

- **Summary:** The BCS Tariff is a utility tariff that allows SoCalGas to design, install, own, operate & maintain biogas conditioning/upgrading equipment on or adjacent to the customers premise
  - SoCalGas will not own the biogas entering or the upgraded biogas leaving the biogas conditioning/upgrading facility
  - For pipeline injection, customer must pay for all costs associated with the interconnection facilities
- **Optional:** The BCS Tariff is an optional tariff service and not tied to any other tariff or non-tariff services the customer may receive
  - The BCS Tariff will be promoted on a competitively neutral basis with periodic reporting to the Commission
- **Price:** The BCS Tariff rate charged to the customer will cover both CapEx and O&M (excluding parasitic load)
  - **SoCalGas ratepayers do not bear the risk** of under collections related to the BCS Tariff
- **Term**: The BCS contract term is negotiable and is expected to range from 15 to 20 years

SoCalGas BCS Tariff Illustration

Customer Owned Biogas

Biogas Conditioning/Upgrading Services Facility
(SoCalGas Owned and Operated)



Customer pays SoCalGas a monthly BCS tariff fee for a turnkey solution

What is included in SoCalGas' turnkey solution?

- 100% of the upfront capital
- Biogas conditioning/upgrading facilities design
- Equipment and construction RFP
- Vendor selection and management
- Project/construction management
- Facility operation and ongoing maintenance
- Contract management

What is not included?

- Customer pays for utility costs (e.g. – kWh to operate the upgrading facility)

Customer Owned Upgraded/ Conditioned Biogas

Customer decides how to use upgraded/ conditioned biogas

Onsite Use – CNG or Generation

Interconnection for Pipeline Injection (Responsibility of Customer)

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Questions?

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