

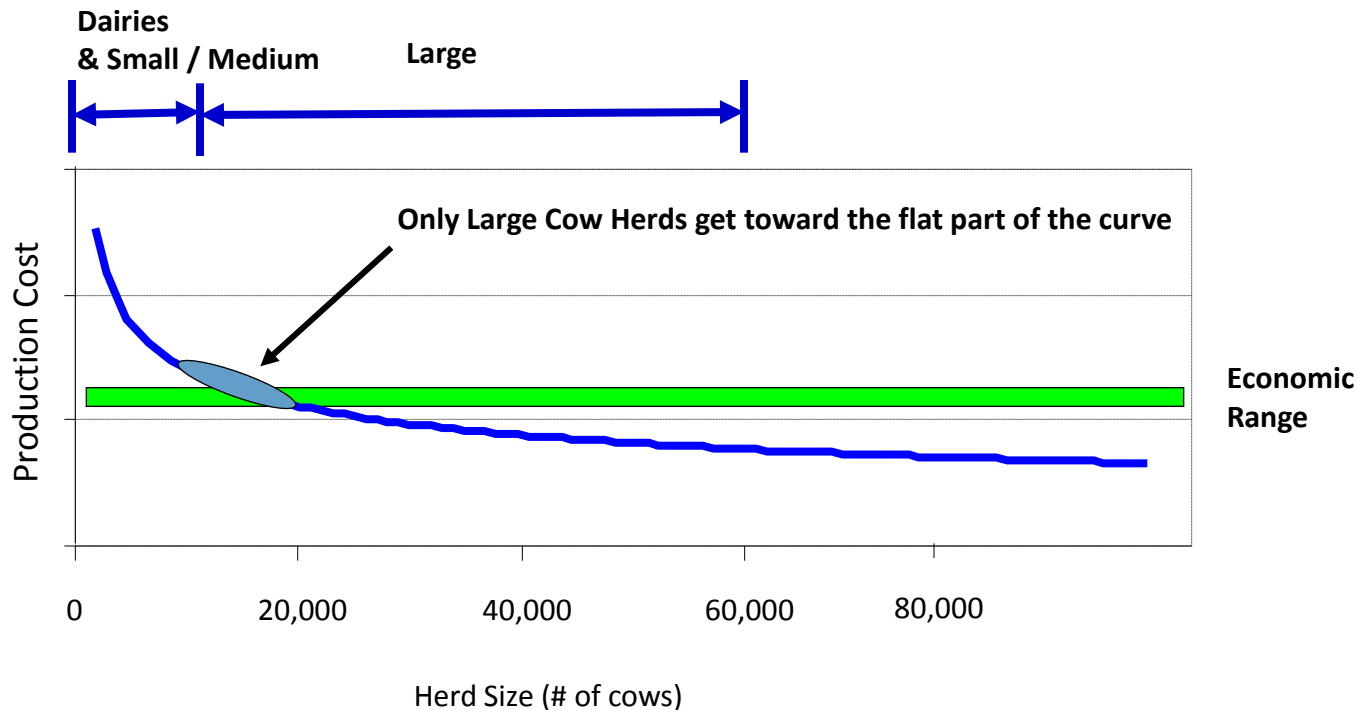
US EPA ARCHIVE DOCUMENT

SoCalGas Biomethane Development Economics

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Economics: Dairy Biogas Conditioning to Pipeline Quality

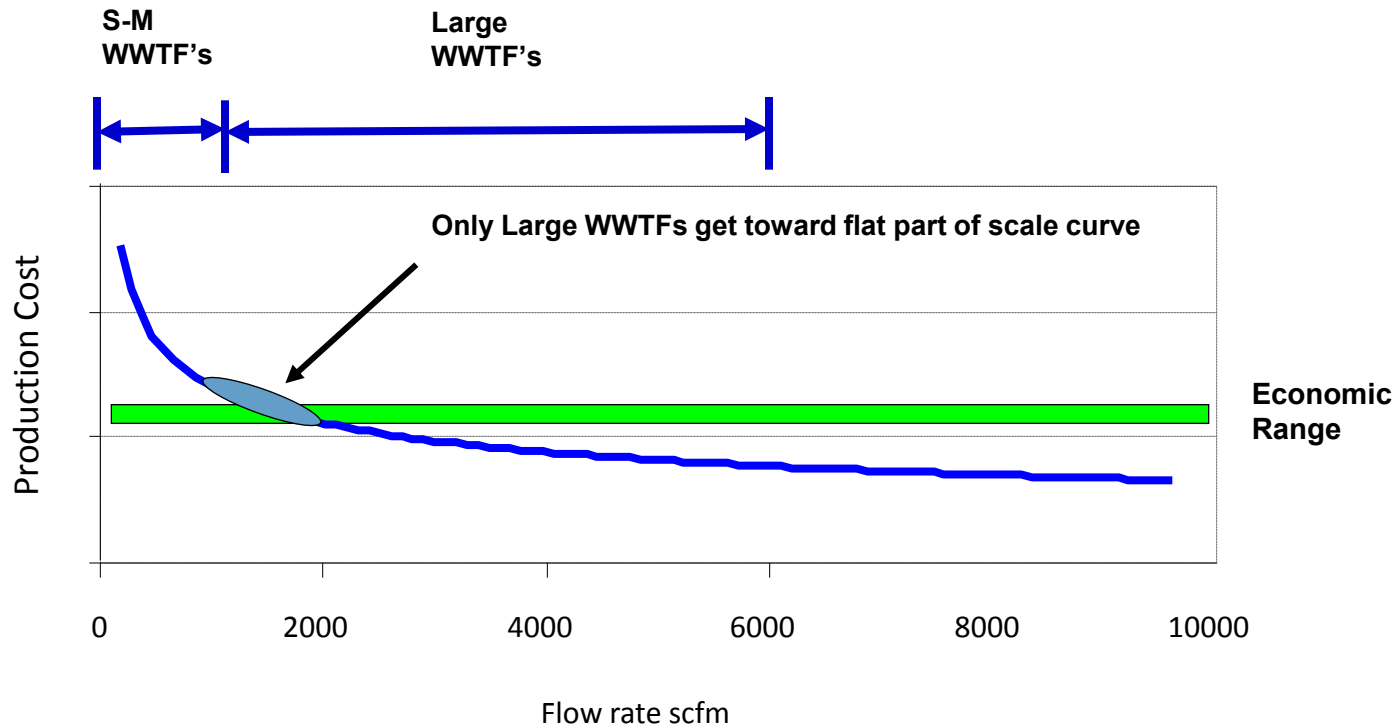
Illustrative



- Scale economies: 850 dairies in SEu territory, 5 dairies in SCG territory 8000+ cows
- Availability and cost of capital
- Availability of monetized GHG credits
- Clustering, rights-of-way, marketing gas issues

Economics: WWTF Biogas Conditioning to Pipeline Quality

Illustrative



- Scale economies: 4 large WWTFs (1,100+ scfm), 3 (500-1,000 scfm), 9 (300-499 scfm), 5 WWTFs (200-299 scfm), 19 (100-199 scfm) in SEu territory
- Small WWTFs: more economic to flare than capture methane.
- Availability and cost of capital
- Availability of monetized GHG credits

Other Development Challenges

- » Permitting: on-site biogas generation challenged by air quality permitting (NOx) and required air, water, and land use multi-layer regulatory approvals

- » Feedstock aggregation
 - Multiple feedstock for improved flow rates v. groundwater issues
 - Rights-of-way for aggregation infrastructure
 - Multiple dairy owners agreement required
 - Engineering of aggregation is site-specific

- » Perceived technology risk
 - SoCalGas Rule 30 and PG&E Rule 21 gas specifications
 - Limited demonstration projects to the financial community

- » Uneven biogas incentives: federal biogas on-site generation incentives not available for pipeline biomethane production

- » Administrative: marketing and contractual arrangements for sale of biomethane required