

Assembly Bill 617: BARCT – Gas Turbines & Duct Burners

Board of Directors
Santa Barbara County
Air Pollution Control District

Our Mission: To protect the people and the environment
of Santa Barbara County from the effects of air pollution.

Aeron Arlin Genet
Executive Director / APCO

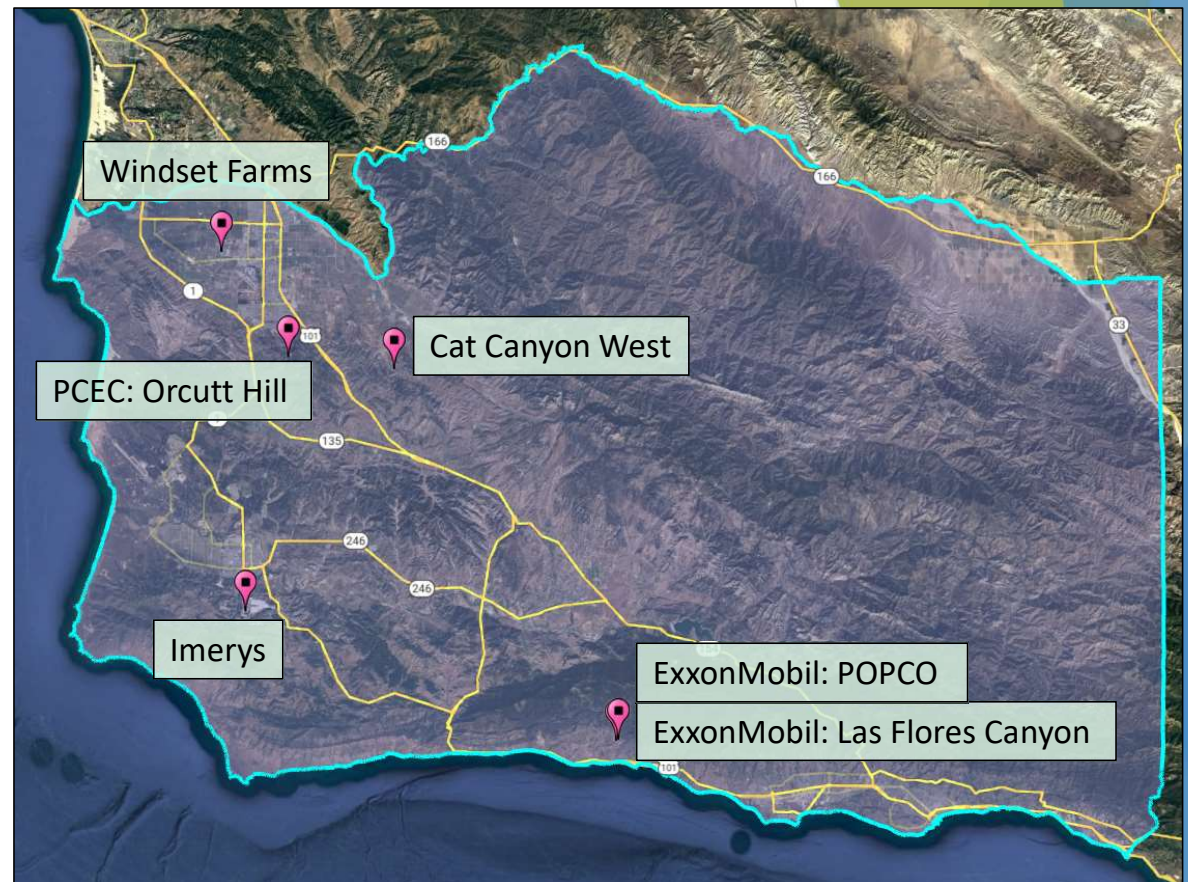
Tim Mitro, Air Quality Engineer
January 18, 2024

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Background: Assembly Bill (AB) 617

- ▶ Enacted in 2017 for Community Air Protection.
- ▶ AB 617 BARCT only applies to large industrial facilities subject to Cap-and-Trade.
 - ▶ Six industrial facilities within Santa Barbara County.
 - ▶ >25,000 metric tons/yr of GHGs as of 1/1/2017.
 - ▶ Requires maximum emission reduction achievable, taking into account environmental and economic impacts.



BARCT Rule Development Schedule

#	Equipment Category	Status	Method
1)	Boilers, Steam Generators, and Process Heaters (5 MMBtu/hr and greater)	<i>Completed June 2019</i>	Amended Rule 342
2)	Boilers, Steam Generators, and Process Heaters (2 - 5 MMBtu/hr)	<i>Completed June 2019</i>	Amended Rule 361
3)	Particulate Matter Control Devices	<i>Completed June 2022</i>	Incorporated into Permit
4)	Reciprocating Internal Combustion Engines	<i>Completed March 2023</i>	Incorporated into Permit
5)	Miscellaneous Combustion Units	<i>Completed October 2023</i>	Incorporated into Permit
6)	Stationary Gas Turbines and Associated Duct Burners	Focus of Board Item Discussion	

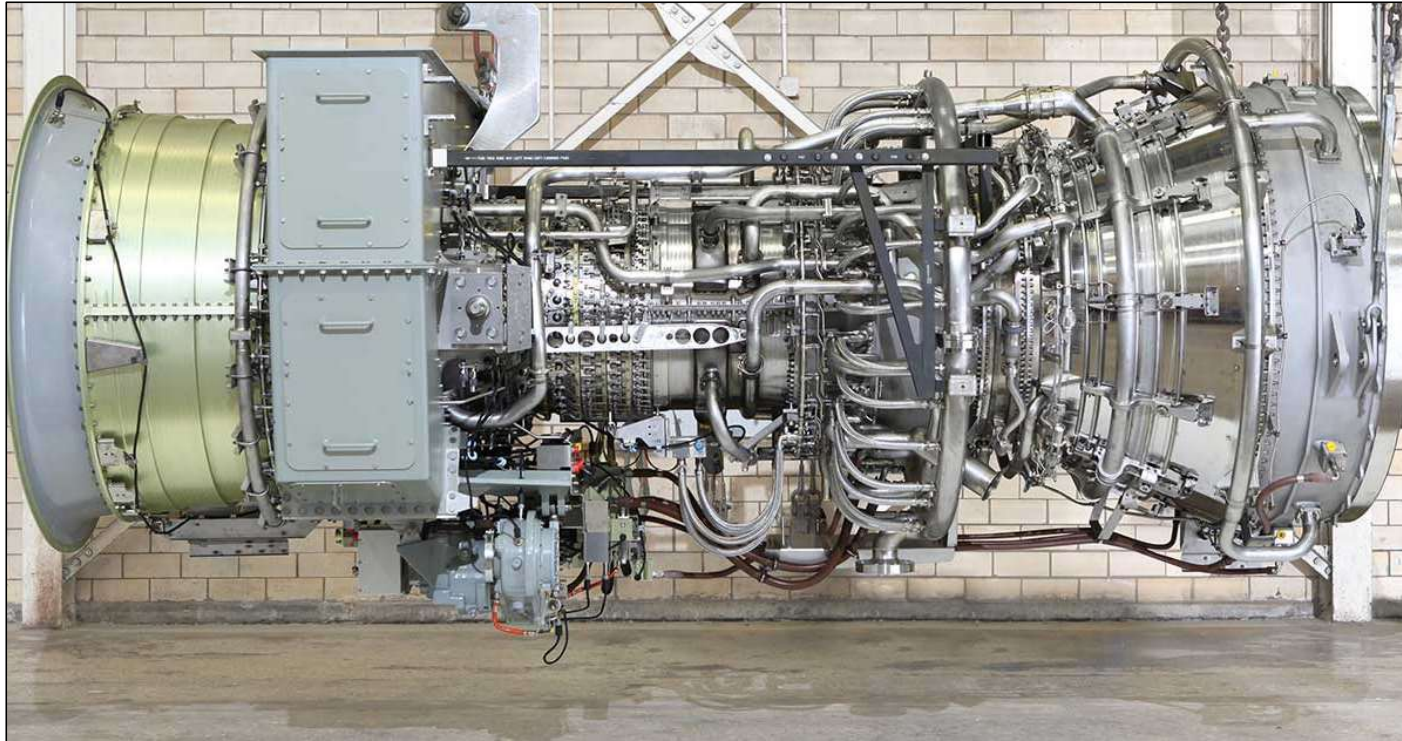
Las Flores Canyon - Oil & Gas Plant

- ▶ 49 megawatt (MW) Combined-cycle, Cogeneration Power Plant;
 - ▶ Gas Turbine rated at 465 MMBtu/hr, and
 - ▶ Duct Burner rated at 345 MMBtu/hr.
- ▶ Originally permitted in 1987. Unit fully installed by 1993.
- ▶ Evaluated for Best Available Control Technology (BACT) during initial permitting.
 - ▶ Selective Catalytic Reduction (SCR) and steam injection used to reduce NOx.
- ▶ Equipment is shut-in and maintained in a preserved state due to the 2015 rupture of the Plains All American Pipeline.

Stationary Gas Turbines

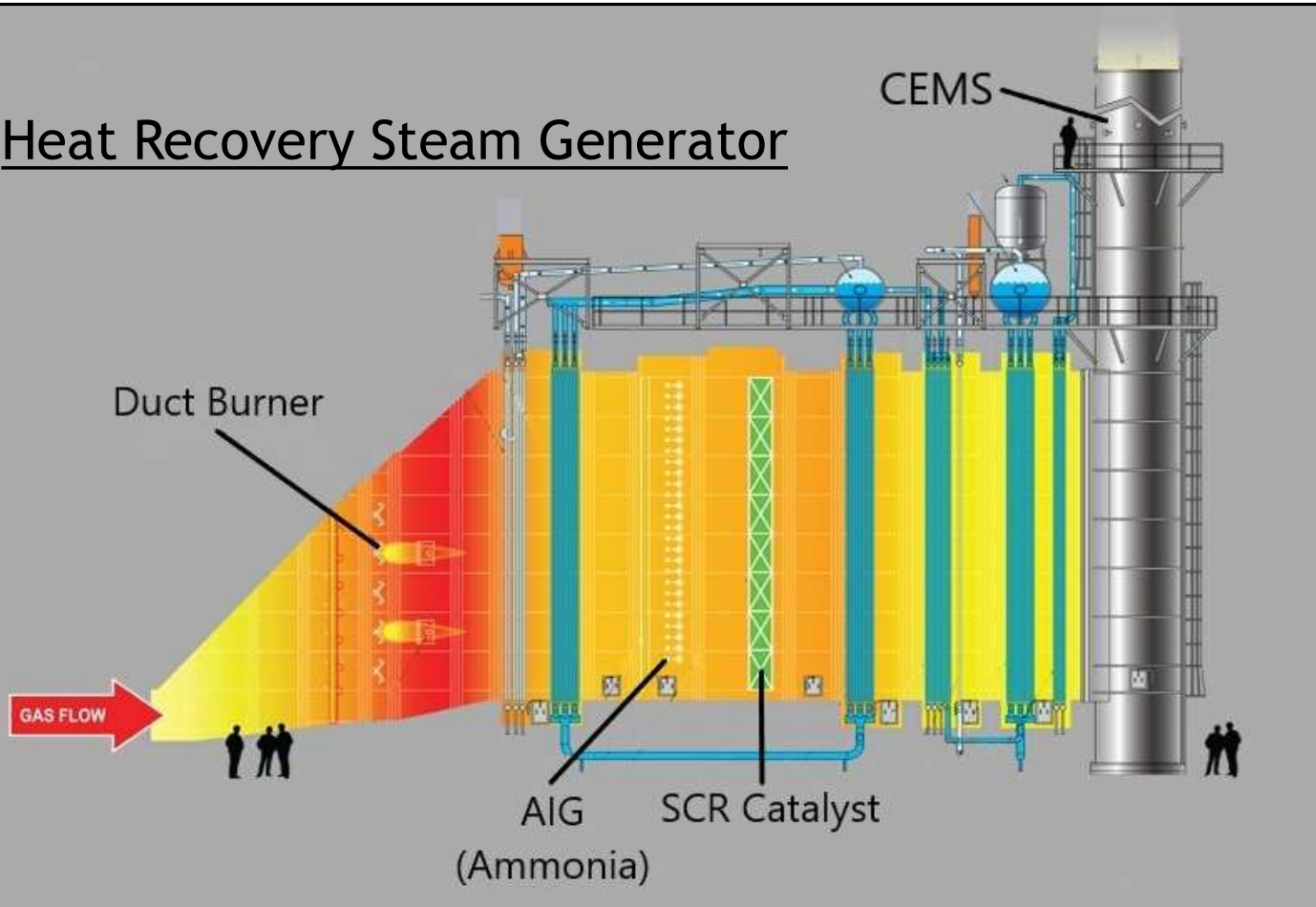
3 Major Components

Compressor - Combustor - Power Turbine



Combined-Cycle, Cogeneration Plant

Heat Recovery Steam Generator



Combined-cycle:
Gas Turbine +
Steam Turbine

Cogeneration:
Uses waste heat for
other processes

BARCT Emission Standard

- ▶ Las Flores Canyon Combined-cycle Power Plant:
 - ▶ **Permit Limits:** 7 - 8 ppmv NO_x
 - ▶ **Typical Values:** 4 - 5 ppmv NO_x [Verified by CEMS]
 - ▶ **BARCT:** 2.0 ppmv NO_x [Based on 2019 determination from South Coast AQMD]

Technology	Description	Technology Control Range	Currently Used at LFC
Steam Injection	<ul style="list-style-type: none">• Steam is injected into the gas turbine.• Lowers the combustion temperature.	60 - 80%	Yes
Selective Catalytic Reduction (SCR):	<ul style="list-style-type: none">• Ammonia is injected into the exhaust.• Reduces NO_x → N₂ & H₂O vapor.	80 - 95+%	Yes

Cost-Effectiveness

	<u>Scenario #1</u> SCR upgrades + Increase Steam
Emission Limit:	2.0 ppmv NOx
Capital and Installation Costs:	\$3.6 million
Annual Operating Costs:	\$250,000 per yr
Utility Costs: (Increase Steam Injection)	\$0 – \$500,000 per yr
Emission Reductions:	19 tpy NOx
Cost-Effectiveness: <i>(20 year project life, 6% interest)</i>	\$30,000 - \$56,000 per ton of NOx

BARCT Implementation

- ▶ ExxonMobil submitted two permit applications to incorporate the BARCT emission standards directly into their operating permit.
 - ▶ The Authority to Construct (ATC) permit allows for modifications to the turbine system to implement the BARCT requirements.
 - ▶ The PTO-Modification/Part 70 Minor Modification incorporates the BARCT emission standards into the Part 70 operating permit.
 - ▶ Permits result in enforceable conditions that satisfies AB 617.
 - ▶ Air pollution control system retrofits required to be implemented prior to the facility recommencing operations.

Recommendation

- ▶ Adopt the resolution, concluding that a new rule for Gas Turbines and Associated Duct Burners is no longer necessary to satisfy the AB 617 BARCT requirements.

BARCT Timeline for Gas Turbines

- ▶ **Dec 2018:** BARCT Schedule adopted by District Board
- ▶ **Aug 2022:** Draft BARCT analysis sent to ExxonMobil for review
- ▶ **Oct 2023:** Permit applications submitted by ExxonMobil
- ▶ **Nov 2, 2023:** CAC Meeting to receive update on BARCT Analysis
- ▶ **Jan 10, 2024:** Permits issued
- ▶ **Jan 18, 2024:** 1) District Board Hearing to receive BARCT Analysis
2) Forward Analysis to CARB

Contact Information

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