January 27, 2014

Docket Control Office
Arizona Corporation Commission
1200 West Washington Street
Phoenix, AZ 85007-2996

Re: Application of Southwest Gas Corporation for Determination of Prudence and Pre-Approval of Ratemaking Treatment Relating to Construction of Liquefied Natural Gas Storage Facility in Southern Arizona

Southwest Gas Corporation herewith submits for filing an original and thirteen (13) copies of its application to the Arizona Corporation Commission seeking pre-approval of the cost recovery associated with the construction, operation, and maintenance of Liquefied Natural Gas storage facility in Southern Arizona.

If you have any questions, please contact me at (702) 876-7163.

Respectfully submitted,

Debra S. Gallo, Director
Government & State Regulatory Affairs

Arizona Corporation Commission
DOCKETED
JAN 27 2014
BEFORE THE ARIZONA CORPORATION COMMISSION

APPLICATION

Introduction.

1. Pursuant to the Arizona Corporation Commission ("Commission") Policy Statement Regarding New Natural Gas Pipeline and Storage Costs ("Policy Statement"), Southwest Gas Corporation ("Southwest Gas" or "Company") hereby submits its application seeking approval of the cost recovery associated with the construction, operation, and maintenance of a liquefied natural gas ("LNG") storage facility in Tucson, Arizona. The diversity in natural gas supply that the LNG storage facility will provide for the applicable service area will afford greater supply reliability and flexibility in natural gas deliveries to the Company's customers. For the reasons set forth herein, Southwest Gas respectfully requests that the Commission approve the construction of the proposed LNG storage facility as being prudent, including approval of the associated costs incurred or to be incurred in carrying out this project.

2. Southwest Gas is a corporation in good standing under the laws of the state of Arizona, is a corporation duly organized, validly existing, and is qualified to transact intrastate business.
3. Southwest Gas' corporate offices are located at 5241 Spring Mountain Road, P.O. Box 98510, Las Vegas, Nevada 89193-8510. Communications regarding this application should be addressed to:

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4. Southwest Gas is a public utility subject to the jurisdiction of the Commission pursuant to Article XV of the Arizona Constitution and the applicable provisions of Title 40 of the Arizona Revised Statutes. Southwest Gas is engaged in the retail distribution, transportation, and sale of natural gas for domestic, commercial, agricultural, and industrial uses. Southwest Gas currently serves approximately 1.9 million customers in the states of Arizona, California, and Nevada. Approximately 54 percent of the Company's customers are located in the state of Arizona, including portions of Cochise, Gila, Graham, Greenlee, La Paz, Maricopa, Mohave, Pima, Pinal, and Yuma counties. For operational purposes, Southwest Gas' Central Arizona division is headquartered in Phoenix and its Southern Arizona division is headquartered in Tucson.

**ACC Policy Statement**

6. In its Policy Statement, the Commission recognized the need for a reliable and secure natural gas infrastructure in Arizona to support adequate service to the growing energy requirements in the state. Specifically, the Policy Statement included the following declarations:

- Diversity in Arizona's natural gas infrastructure, including interstate pipeline facilities, natural gas storage facilities, and related aspects of natural gas service, is beneficial and should be actively pursued by Arizona utilities as a way of providing greater supply reliability and flexibility and possible lower costs.

- Arizona utilities should consider natural gas storage as an integral component of their efforts to develop a diverse natural gas supply portfolio, recognizing the variety of potential benefits of natural gas storage, including enhanced reliability, operational flexibility, more efficient use of pipeline capacity assets, and reduced natural gas price volatility.

- The Commission endorses voluntary efforts to analyze and plan for the present and future natural gas supply needs of Arizona and encourages Arizona utilities and others to actively participate in such activities.

7. In addressing the need for the development of new natural gas infrastructure in Arizona, the Commission further recognized that cost recovery for these projects was a "significant issue" that needed to be considered. The Commission stated the following:

- In recognition of the current need for natural gas infrastructure in Arizona, the Commission has also been considering alternate approaches to encourage the development of infrastructure in Arizona. Pre-approval of cost recovery would be one possible mechanism. The alternative recovery mechanism should incite utilities to invest in the infrastructure they need to provide the best service to their customers.

- At this time the Commission believes that the best method for the Commission to address natural gas infrastructure matters is to encourage utilities to file applications, including requests for alternate cost treatment, in order that the Commission can consider specific requests for cost recovery proposals appropriate to the circumstances for each individual applicant.
8. In light of the Commission's Policy Statement, Southwest Gas files this application for approval to construct, operate, and maintain the proposed LNG storage facility and to recover the actual costs associated therewith, including the establishment of a regulatory asset. The Company believes that the facts and circumstances set forth in this application support the requested relief by demonstrating that the construction of the LNG storage facility will accomplish many of the objectives specified in the Policy Statement.

9. As discussed in greater detail below, Southwest Gas has identified a preferred site location in Southeast Tucson for its proposed LNG storage facility. The proposed LNG storage facility will be designed and constructed in accordance with all applicable safety regulations and standards. The land requirement for the proposed LNG storage facility is approximately 30 acres and will be equipped with a security system, hazard detection system, emergency shutdown system, and will include appropriate spill containment areas. The storage tank is estimated to measure approximately 60 feet in height and 108 feet in diameter and will have a design storage capacity of approximately 233,000 Dth or 2,815,000 gallons, which is sufficient to allow for the withdrawal of approximately 65,000 Dth/day. To fill the storage tank, the Company has considered: (1) transferring LNG from tanker trucks; or (2) liquefying natural gas onsite, as further addressed below. Construction of the proposed LNG storage facility is expected to take between 24 and 30 months.

Benefits of a Local LNG Storage Facility.

10. The primary purpose of the proposed LNG storage facility is to have readily available local gas supply to dispatch into Southwest Gas' distribution system during severe supply disruption events. In order to deliver gas supplies purchased from the Permian and San Juan Basins to customers in its Tucson service area, Southwest Gas relies exclusively on El Paso Natural Gas' ("El Paso") interstate transportation services. As a result of this dependency on El Paso and its ability to provide reliable transportation service, to the extent El Paso experiences any
10 operational issues — including supply disruptions — Southwest Gas' distribution system may also be impacted.

11 Indeed, Southwest Gas, as well as the rest of the southwest United States, experienced such an event in early February 2011. During this event, the Tucson and Sierra Vista areas experienced extreme cold temperatures. These conditions, combined with an unanticipated decrease in the available gas supply from El Paso's system, caused pressures in El Paso's pipeline serving this area to drop below design parameters. As a result of these circumstances and reported customer outages on the Company's distribution system, Southwest Gas determined that it was necessary to temporarily interrupt natural gas service in certain areas in this region to avoid a possible complete failure of its distribution system. This event impacted approximately 19,000 Southwest Gas customers.

12 Following the February 2011 event, the Federal Energy Regulatory Commission and the North American Electric Reliability Corporation conducted an investigation. In a report entitled "Outages and Curtailments During the Southwest Cold Weather Event of February 1-5, 2011" ("FERC Report"), it was determined that additional "local" natural gas storage in Arizona could have prevented many of the outages that occurred. The FERC Report explained that "[n]atural gas storage is a key component of the natural gas grid that helps maintain the reliability of gas supplies during periods of high demand" and that "$[t]orage can help [local distribution companies] maintain adequate supply during periods of heavy demand by supplementing pipeline capacity, and can serve as a backup supply in case of interruptions in wellhead production." (FERC Report, p. 213.)

13 By having readily available local natural gas supply that can be timely dispatched into sections of its distribution system upon demand, an LNG storage facility will support Southwest Gas' ongoing efforts to enhance the reliability of segments of its distribution system and mitigate against future service interruptions resulting from supply shortage events.
14. Other advantages of having a storage facility connected to part of Southwest Gas' distribution system include: (i) ability to mitigate localized curtailments that could come about due to third-party damage caused by construction or other activities; (ii) mitigating localized interruptions that may result from the performance of required maintenance; and (iii) sustaining local system requirements during times of high system demand.

15. To address the Commission's recognized need for additional infrastructure and meet the needs of its customers for an alternate secure and reliable gas supply, Southwest Gas has considered other alternatives. However, none of these alternatives proved to be as reliable and cost effective as the proposed local LNG storage facility. The Company spent a significant amount of time considering possible underground storage solutions during its participation in the Arizona Storage Coalition. The coalition was ultimately unsuccessful in identifying a viable underground project. Barriers such as unquantifiable development costs and potential environmental issues proved too difficult to overcome.

16. In addition, the proposed LNG storage facility offers superior service and reliability compared to existing third-party storage providers. Located in and around Texas are providers that offer storage services to shippers on El Paso. In fact, the Company currently has a contract with Enstor to provide such services for the benefit of its customers. While these storage arrangements can provide an alternate supply source to gas typically sourced from the gas production areas, injection of gas supplies from Texas-based storage into El Paso – some 700 miles upstream of the Company's distribution system – offers no support for the immediate pressure needs on the distribution system during peak demand or supply shortage events. Further, during extreme supply shortage periods on the interstate pipeline system, there is no assurance that gas withdrawn from storage in Texas would in fact be timely delivered to the customer's market area. For example, potential problems with upstream facility performance or other shippers upstream of Southwest Gas taking the gas prior to it...
reaching the desired destination could both impact deliveries to Southwest Gas customers.

17. Moreover, if required to rely on the transportation services of interstate pipelines for delivery from storage, Southwest Gas would be compelled to adhere to the applicable interstate pipeline gas scheduling tariff provisions in order to schedule gas from the storage facility. By instead relying on a local storage option, Southwest Gas will have greater flexibility to take gas from storage when it is needed, which could be critical during supply shortage events. The proposed LNG storage facility would be operated by Southwest Gas and connected directly to its distribution system, making it accessible for customer demands 24 hours a day without the need to schedule gas on El Paso or with a third-party storage provider.

Safety Features of Proposed LNG Storage Facility.

18. Southwest Gas' proposed LNG storage facility will be designed and constructed in accordance with all applicable safety regulations and standards. The proposed LNG tank consists of a cryogenic inner tank and a non-cryogenic outer tank. The tank is classified as a single containment tank. The inner tank is insulated with load bearing insulation between the outer and inner floors, granular insulation in the annular space between the tank walls, and closed by an insulated suspended deck (i.e. ceiling). The foundation for the tank is expected to be a ring wall, and will be configured with electric foundation heat to prevent soil freezing underneath the foundation.

19. The proposed LNG storage tank will be located within an impoundment area that is configured according to the applicable regulations to contain the entire liquid contents of the tank in the event of an uncontrolled leak.

20. The proposed LNG storage facility will be equipped with a security system, including barbed wire fencing surrounding the perimeter of the facility and monitoring of the area with closed circuit television systems. Access to the site will be limited by security controlled gates. In addition, the facility is expected to have a
hazard detection system consisting of the following: fire detectors; flammable gas
detectors; smoke and heat detectors; and a seismic event recorder. The proposed
LNG storage facility will also have an emergency shutdown system to prevent the flow
of natural gas in the event of a gas leak or fire. The security and related control
systems will be capable of manual, automatic, or remote operation.

21. In addition to the aforementioned safety features, Southwest Gas has
considerable experience owning and operating an LNG storage facility. Paiute
Pipeline Company ("Paiute"), a Southwest Gas affiliate, has been safely maintaining
and operating an LNG storage facility in Lovelock, Nevada for more than 30 years
without incident. A significantly larger facility than the proposed LNG storage facility, it
has a storage capacity of 1 Bcf, with a firm withdrawal capacity capability of 71,959
Dth. Paiute's LNG storage facility is also outfitted with liquefaction equipment. As a
result, Southwest Gas has gained and will continue to gain the requisite knowledge
and experience pertaining to safe operation and maintenance of an LNG storage
facility.

22. LNG storage facilities have maintained a consistent safety record for
nearly 70 years. As the LNG itself is not ignitable, LNG has likewise proven to be safe
when used properly. While under specific limited circumstances LNG vapors are
considered flammable, these conditions are not likely to exist at the proposed LNG
facility as the storage tank and related facilities are specially designed to prevent the
potential for a combustible mixture of air and gas within an enclosed space. Further,
LNG has been deemed a non-toxic substance. For example, if LNG were mixed with
water, the water would be safe to drink after complete vaporization of the LNG. Unlike
gasoline or other liquid fuels, once LNG vaporizes no toxic residue remains.
General Project Description.

23. Southwest Gas has considered several sites in the Tucson area for the facility, and it has identified a preferred site located in Southeast Tucson and is currently working with the land owner to secure the site, subject to Commission approval of this project. In reviewing these sites, several key factors have been analyzed, including: safety considerations, pipeline maximum allowable operation pressure, system take away capacity, site access, and proximity to Southwest Gas' existing distribution system. The land requirement for the proposed LNG storage facility is not expected to exceed 30 acres.¹

24. The proposed LNG storage facility is anticipated to consist of a flat bottom API 620 tank with a cryogenic inner tank and a non-cryogenic outer tank, and related pumps, a boil-off system, vaporization equipment, and equipment to facilitate the filling of the storage tank. The storage tank is estimated to measure approximately 60 feet in height, with a diameter of 108 feet. In addition, the LNG storage facility will include spill containment areas, a control building, and security fencing surrounding the entire facility. Attachment 1 includes a typical site plan drawing prepared by CHI Engineering.

25. The design storage capacity of the proposed LNG facility is approximately 233,000 Dth or 2,815,000 gallons. This capacity is sufficient to allow a minimum of 168,000 Dth of supply to be readily available after boil-off and vaporization fuel loss.² Once the LNG vaporizes, it will be dispatched into Southwest Gas' distribution system and taken as part of the day-to-day supply requirement. Therefore, no gas is lost during the boil-off process. The proposed design of the vaporization equipment will allow for the withdrawal of approximately 65,000 Dth/day.

¹ In order to obtain preliminary design requirements and the associated cost estimates for this project, Southwest Gas retained the services of CHI Engineering Services, Inc. ("CHI Engineering").

² Boil-off occurs during a heat transfer process that causes the LNG stored in the tank to vaporize after the LNG reaches a temperature greater than minus 260 degrees Fahrenheit.
Natural gas vaporized out of the LNG storage facility will be delivered into Southwest Gas' high pressure system downstream of either the Company's existing Valencia Road or Houghton Road taps.

26. Following the initial fill of the storage tank, it is estimated that a minimum of 11,000 Dth or 134,000 gallons of LNG inventory is required to remain in the tank at any given point in time. This LNG inventory, known as heel gas or cushion gas, is necessary to keep the tank cool when it is not full. After the initial fill, the total volume of LNG required to fill the storage tank each year will be offset by the heel gas and unused working inventory remaining in the tank.

27. Depending on the site location, Southwest Gas will need to install up to seven miles of Southwest Gas mainline facilities to connect the LNG storage facility to its existing high pressure system. Other utilities, such as water, electric, telecom, and sewer/septic, will also need to be installed at the site. In addition, to permit access to the facility Southwest Gas may be required to construct paved roadways depending on the site location.

28. The Company has considered two alternatives for filling the storage tank: (1) transferring LNG from tanker trucks; or (2) liquefying natural gas onsite using liquefaction equipment to convert the natural gas into a liquid form for ease of storage.

29. The first alternative would be to fill the tank by transferring LNG from tanker trucks into the LNG storage tank. Southwest Gas intends on purchasing the LNG from a vendor who produces LNG and provides the necessary transportation services to deliver the LNG to the proposed facility. Although Southwest Gas has yet to enter into any supply agreements with such vendors, the Company has currently identified and had preliminary discussions with a vendor located near Topock, Arizona. The approximate distance from this vendor's facility to the Southeast Tucson area is 365 miles. The total maximum amount of LNG that would need to be purchased and delivered to the storage facility for the initial fill under this alternative is approximately 268,000 Dth or nearly 3,238,000 gallons. This amount takes into
account the anticipated LNG flash or vapor lost in the process of refilling the tank, which is why the estimated total maximum amount for the initial fill is more than the proposed design storage capacity. Southwest Gas estimates that the LNG storage facility will be filled at a rate of 10,000 gallons per hour, which would result in the tank being filled in approximately 41 days.

30. The second alternative would include installing liquefaction equipment during the construction of the LNG storage facility. Liquefying natural gas is accomplished by condensing it through a cooling process. The proposed liquefaction equipment would be capable of liquefying approximately 2,000 Dth or 24,000 gallons of LNG per day. Under this alternative, Southwest Gas would need to purchase approximately 335,000 Dth or 4,054,000 gallons of natural gas for the initial fill of the storage tank. This amount is necessary to cover the LNG flash or vapor losses mentioned above, in addition to an estimated 5% gas loss associated with the liquefaction equipment. Southwest Gas estimates that it will take approximately 137 days to fill the tank using liquefaction equipment.

31. Southwest Gas anticipates that it will take between 24 and 30 months to complete construction of the proposed LNG storage facility. If the facility were to include the construction of onsite liquefaction equipment it is estimated that an additional 6 months would need to be included in the projected construction schedule.

Benefits of Liquefaction Equipment.

32. A storage facility outfitted with liquefaction equipment provides operational and service flexibility benefits. For instance, having liquefaction equipment onsite at an LNG storage facility provides the flexibility of replenishing withdrawn inventory throughout the year without dependency on a vendor that produces and transports LNG to the storage facility.

33. An LNG storage facility with liquefaction equipment can also provide Southwest Gas with the operational flexibility of using readily available LNG to temporarily serve parts of Southwest Gas' distribution system that may not be able to
adequately support sudden customer growth. Further, in the event of a service interruption or outage resulting from required maintenance or repairs of certain sections of the Company’s system, Southwest Gas may be able to utilize available LNG to mitigate the effects of any such work.

34. The liquefaction equipment could further benefit Southwest Gas and its customers relative to the future maintenance and operation costs associated with the LNG storage facility. With this equipment, Southwest Gas may have opportunities to provide Commission approved LNG tariff services upon making the necessary regulatory filings. For example, Southwest Gas could provide LNG service to vendors who have LNG fueling stations for transportation use. Southwest Gas could also provide LNG service to other utilities for peak shaving or temporary supply purposes. The revenues received from any such services could be used to offset the customer impacts associated with future maintenance and operation costs.

35. It is anticipated that installing liquefaction equipment would add approximately $24,000,000 to the project cost. As a result, notwithstanding the potential benefits of installing liquefaction equipment, Southwest Gas recommends filling the tank by transferring LNG from tanker trucks to minimize the overall project cost and the resulting bill impact to customers.

Estimated Costs and Deferred Accounting Treatment.

36. The current estimated total capital cost of the proposed LNG storage facility, including those facilities necessary to connect the proposed storage tank to Southwest Gas’ existing distribution system, is approximately $46,363,000.

37. Since Southwest Gas is in the preliminary stages of this project and has yet to secure a specific site location or conduct a detailed engineering analysis and cost estimate, Southwest Gas respectfully requests approval of the actual cost of the facility, not to exceed $55,000,000. The $55,000,000 consists of the estimated cost of $46,363,000, plus 20 percent, which is a reasonable contingency commonly used in the industry.
38. Utilizing the requested not-to-exceed amount of $55,000,000 as a proxy, the annualized revenue requirement associated with the proposed LNG storage facility equates to a monthly bill impact of $0.54 or 1.34 percent for an average residential customer using 25 therms per month.

39. Based on a $4.00/Dth Southern California border market price for natural gas, plus the associated cost for a third-party vendor to produce and transport the LNG to the proposed storage facility, Southwest Gas estimates that the annual gas cost associated with this boil-off will be approximately $1,678,000. The total cost per unit is approximately $13.42/Dth. This amount would increase the average gas cost rate for residential customers by approximately $0.00319 per therm, which equates to a monthly bill impact of approximately $0.08.

40. As a result, the estimated combined average monthly bill impact on residential customers of the incremental costs associated with the proposed LNG storage facility would be $0.62.

41. In light of the costs Southwest Gas anticipates incurring to complete, operate, and maintain the proposed LNG storage facility, the Company is requesting approval to establish a regulatory asset to defer the ongoing revenue requirement associated with the proposed LNG storage facility, including the depreciation expense, property taxes, operation and maintenance expenses, and carrying charges consistent with the Company's currently authorized pre-tax rate of return, until the Company's next general rate case.

\[3\] Southwest Gas' preliminary ratemaking proposal contemplates that depreciation expense on distribution plant would be calculated using the currently authorized depreciation rates. Since Southwest Gas does not currently have an authorized depreciation rate for storage plant, the depreciation rate of 4.75% (as currently authorized for Palute's storage plant) was used as a proxy.

\[4\] Property taxes would be calculated using the Company's current property tax rate.

\[5\] Southwest Gas estimates that the first year annual cost to operate the LNG storage facility will be approximately $237,000. These costs are primarily associated with property insurance, manpower, utilities, and maintenance for the facility.
42. Furthermore, since the Company is in the preliminary stages of this project and has yet to secure a site for the facility or retain an engineering consultant to conduct a detailed analysis and cost estimate for the proposed LNG storage facility, it is possible that an unforeseen circumstance may arise resulting in Southwest Gas recommending not to construct the project. As this decision may occur sometime after the Company has incurred significant costs, Southwest Gas seeks approval to recover any and all non-refundable project-related costs prudently incurred by the Company, regardless of whether the project is constructed.

Cost Recovery.

43. In the event the proposed LNG storage facility is included in the Company's next general rate case, the depreciated capital costs associated with the LNG storage facility (net of deferred taxes) and LNG inventory will be incorporated into the development of the test year rate base, and the ongoing expenses related to the facility will also be included in the test year revenue requirement. However, if the LNG storage facility is not included in rate base in the Company's next general rate case, the Company plans to request approval of a cost recovery mechanism that would facilitate recovery of the LNG storage facility costs that have been deferred into the regulatory asset.

44. With respect to gas cost recovery, Southwest Gas requests that the gas costs associated with the LNG storage facility be recovered pursuant to the Purchased Gas Cost Adjustment Provision ("PGA") of the Southwest Gas Arizona Gas Tariff. Assuming there is no supply disruption which necessitates use of the LNG contained in the storage facility, it is anticipated that the proposed facility will yield approximately 125,000 Dth of boil-off annually, which will be dispatched into Southwest Gas' distribution system and taken as part of the day-to-day supply requirement.
Conclusion.

45. By having readily available local gas supply to dispatch into Southwest Gas’ system, the proposed LNG storage facility will enhance the reliability and flexibility of Southwest Gas’ distribution system and mitigate against future service interruptions arising from severe supply disruption events in the area. Thus, Southwest Gas believes that the LNG storage facility has long-term benefits for its customers. This proposal was a result of reasoned and thoughtful judgment that balanced the cost of the project with the benefits derived from it.

46. Based thereon, the construction of the LNG storage facility and the costs related thereto should be deemed reasonable and prudent. Pursuant to the Commission’s Policy Statement, Southwest Gas respectfully requests that the Commission approve recovery of these costs as set forth herein.

WHEREFORE, Southwest Gas respectfully requests that the Commission issue a final order:

A. Granting Southwest Gas approval to construct, operate, and maintain the proposed LNG storage facility to serve its customers;

B. Approving Southwest Gas’ actual project costs for the proposed LNG storage facility, not to exceed $55,000,000 for an LNG storage facility without liquefaction;

C. Authorizing the Company to establish a regulatory asset to capture the ongoing revenue requirement associated with the proposed LNG storage facility and to recover those deferred costs in the Company’s next general rate case or through a cost recovery mechanism established in its next general rate case, as set forth herein;

D. Authorizing Southwest Gas to recover the costs associated with any gas released from the LNG storage facility into the Company’s distribution system and taken as part of the day-to-day supply requirement, including without limitation, the boil-off, pursuant to the PGA mechanism; and
E. For such other relief as this Commission deems appropriate.

Dated this 27th day of January 2014.

Respectfully submitted,

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