

# More gas storage needed

## Zager says a variety of storage options required; scope for conservation

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With winter cold in Southcentral Alaska perhaps three months away, the season is fast approaching when a severe cold snap could push the required delivery rate of utility [natural gas](#) for heating and power generation up to and perhaps beyond the limits of feasible production from gas wells in the [Cook Inlet](#) basin. One possible solution to this gas deliverability crunch is the use of gas storage facilities, to store excess gas produced during the summer and then release that gas into the utility system during the winter when demand is high.

### Three facilities

There are already three storage facilities successfully operating in depleted gas fields around Cook Inlet. Marathon operates one of these facilities in its Kenai gas field; Chevron operates two facilities, one in the Swanson River field on the [Kenai Peninsula](#) and one in the Pretty Creek field on the west side of the Cook Inlet. And [Aurora Gas](#) is proposing to establish an additional storage facility in its Nicolai Creek field south of Tyonek.

“At peak, when our storage is full, we can do in excess of 60 million cubic feet per day out of the combined (Chevron) systems,” John Zager, Chevron’s Alaska manager, told *Petroleum News* Aug. 4.

Both facilities can help support either the on-going high gas load of a typical winter or the peak load during particularly severe cold. However, Chevron tends to use Pretty Creek primarily to bolster the on-going winter load.

“We tend to turn that on and leave it on throughout the winter, whereas we tend to use Swanson more as a peaking field,” Zager said.

Zager said that gas storage is critical to addressing the short to intermediate issues relating to the deliverability of utility gas. And a variety of different types of storage could address different delivery needs, such as continuous or needle peaking supply. In addition to the type of below-ground storage that has been implemented already, the above-ground storage of LNG would be especially suitable for needle peaking delivery of gas.

### Not cheap

But none of the gas storage options is cheap.

“People want to talk about affordable gas, which is a great desire, but you need to look at security of supply too,” Zager said.

Both Chevron and Marathon operate their storage facilities in support of their own operations, to ensure that they can meet their contracted gas supply obligations during the winter. But the storage supports long-term, full-service supply contracts, with constant gas pricing regardless of season variations in demand. This type of contract is disappearing, in part because it does not recognize the full cost of meeting winter demand, Zager said.

Instead, pricing will likely become more flexible, perhaps tiered to the gas demand level, thus opening possible gas storage roles for gas utilities, power utilities or perhaps third-party gas storage operators.

“The market will find an answer, given the opportunity,” Zager said. “Tiered pricing may work. There may also be a mechanism whereby a utility and the customers would pay a capacity charge, whether they use the gas or not.”

The concept of a capacity charge arises from the need to protect a gas storage operator from the risk of establishing and filling a storage facility, and then encountering a mild winter in which the storage is not needed — essentially the capacity charge would operate like an insurance premium, to ensure the availability of sufficient gas during exceptionally cold weather.

And then there is the risk associated with uncertainty in the future of the Cook Inlet gas market — in June Ethan Schutt, vice president for land and legal affairs for Cook Inlet Region Inc., a [Native](#) regional corporation with major land holdings around the Cook Inlet, told the [Senate](#) Resources Committee that CIRI had determined that the development of gas storage for third-party use in the Cook Inlet basin is very unattractive for private industry because of high development costs and high market uncertainty.

“Although the concept seems attractive and to serve a public purpose, the economics aren’t worth the risk right now,” Schutt said.

### **Technical challenges**

However, aside from the commercial challenges of establishing a viable gas storage facility, anyone setting up an underground storage facility in the Cook Inlet basin faces some significant technical challenges. Whereas in the Lower 48 a company might construct an underground storage facility by using fossilized reef structures with large cavities, or by leaching salt from an underground salt dome to create a cavern that can be filled with gas, operators in the Cook Inlet basin have to use relatively poor reservoirs in muddy sandstones, Zager said.

“We in the Cook Inlet do not have what are considered good storage reservoirs,” he said.

Producing gas too fast from a Cook Inlet sandstone reservoir runs the risk of sand production through the gas wells, while issues such as water encroachment in the reservoir need to be

considered. There's also the risk of losing gas that's pumped into a less-than-optimum reservoir for storage.

"The first time you're filling that reservoir with gas, you're just hoping it comes back out again," Zager said.

And the need to use a depleted gas field for storage limits the number of underground storage facilities that can be brought into use, as well as determining the locations of gas storage sites and possibly introducing issues relating to joint ownership of field leases. The need to locate a storage facility at a place on the Cook Inlet pipeline system where stored gas can be delivered at sufficient rate through the pipelines further limits the availability of gas storage locations — many Chevron properties are offshore, where storage operation does not seem to make much sense, Zager said.

And no one is going to take the risk of trying to establish an underground facility in a location other than a depleted field.

"My theory would be if nature hasn't been able hold gas for a long period of time, I'm not going to bet on it," Zager said.

### **New gas**

Zager also cautioned that, although gas storage can help with short-term gas deliverability issues, the storage does not actually create any new gas to bolster supplies. In the longer term gas from new Cook Inlet discoveries, from the [North Slope](#) or from LNG imports will have to come on line, he said.

And, in the short term, gas conservation, through measures such as turning down thermostats, using wood stoves and deferring activities with high power or gas consumption, could go a long way to overcoming the peak gas deliverability hurdle.

"If on a cold day you could shave demand by 10 percent, that would equate to a nice-sized gas field or an entire storage facility," Zager said.

And building a new storage facility, including [permitting](#), and perhaps [drilling](#) a new well and installing compression, would likely take a couple of years.

"It's not like if we decided now, we can have anything ready for this winter, or probably even next winter," Zager said.