

# Favorable Climate for New Nuclear Power Plants in the U.S.

PIME 2006

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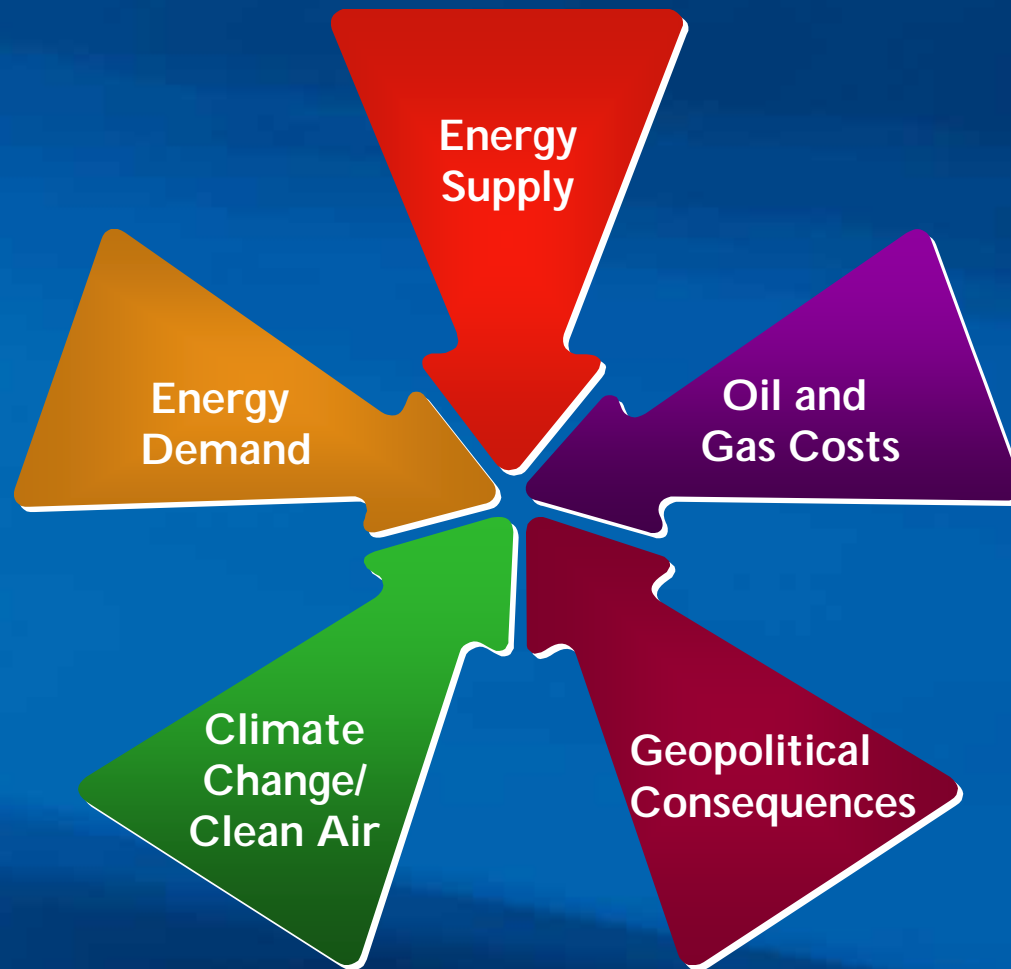
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# What Do Jennifer Lopez, Sexy Jeans and Nuclear Energy Have In Common?



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# Factors Driving Public Support



# Nuclear Energy: Valuable Part of the Solution

- Clean air
- Reliable
- Affordable
- Energy Security
- Safe



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# Nuclear Power in the News

## Industries Nuclear Power



BYRON, ILL. Some plants are actively seeking new plants.

## Maybe in My Backyard

High fuel prices and global warming are making nukes an easier sell

**H**OBBLER BY IMAGES OF Three Mile Island and Chernobyl, staggering costs, and opposition from enviros and politicians, nuclear power once seemed destined to go the way of the dodo. "Just five years ago, utility executives were saying they wouldn't be caught dead even talking about a new plant," recalls Massachusetts Institute of Technology nuclear engineer Andrew C. Kadak. U.S. utilities were shutting reactors, and Germany planned to pull the plug on its facilities.

Today, nukes are on the verge of a global comeback. A new plant is under

construction in Finland, the first in Europe since 1991. France, which already has 58 plants, says it will build 30 more. China plans to spend \$50 billion on atomic energy construction by 2020. In the U.S., where 103 existing reactors have become cash cows, a dozen companies are seriously considering building new plants. And the energy bill signed by President George W. Bush on Aug. 8 has billions of dollars in subsidies. "Things have never looked better," says Dan R. Keuter, vice-president for business development at Entergy Nuclear in New Orleans.

What's fueling this resurgence? In a word, economics. Rising natural gas and

coal prices are starting to make nukes look inexpensive. Another factor is global warming. Not only do new restrictions on emissions of carbon dioxide increase the costs of fossil fuel-generated electricity, fears of climate change have softened opposition among some enviros. While the government must still solve problems of waste and security, says Steve Cochran of Environmental Defense, "given the challenge of climate change, the world needs to be open to every low-carbon initiative—including nuclear power."

Construction in the U.S. won't start tomorrow, however. There are still major uncertainties. Natural gas prices must stay high to make nukes economical. With increasing imports of liquefied natural gas, that's not a sure thing. Utilities must also convince Wall Street that the long delays and huge cost overruns that doomed N-power in the 1980s won't happen again.

As a result, companies say they won't order a new plant until they are sure they can get a license from the Nuclear Regulatory Commission, a process expected to take four to five years. "At the very earliest, we are looking at construction starting around 2010," says Adrian Heymer, director of new plants deployment at the Nuclear Energy Institute. Since construction would take four to five years, electrons from the new nukes couldn't start flowing until 2014 or 2015 at the soonest.

It could be longer than that. John W. Rowe, chairman and CEO of Exelon Corp., believes that a new generation of reactors is essential. But even though Chicago-based Exelon is the nation's biggest nuclear utility, with 17 reactors, Rowe says the risks are still too great to order new plants now. "While the stars and moons are moving in the right direction, they're not there yet for us," he says.

## New nukes won't come on line until 2014—at the earliest

### FRUSTRATION FACTOR

THE LACK OF immediate action frustrates Washington politicians, who crafted energy legislation that, among other things, was designed to make nukes nice again. The bill offers government loan guarantees so that banks won't demand a risk premium when financing new reactors, and a production tax credit. It also provides up to \$2 billion to cover costs associated with regulatory delays. That's on top of changes Congress made to the licensing process in 1992. "For anyone who says there is still too much regulatory uncertainty, I have to question how serious they are," says one Senate staffer. Congress has "piled yet one more security blanket on the pile of blankets," he says.

Industry execs insist that new plants will be built, but say they are getting there one step at a time. "No one would make a decision to order a plant now," explains Michael J. Wallace, executive vice-president of Constellation Energy Group. The Baltimore utility and others, however, are already partway there. Entergy, Exelon, and Dominion have filed applications with the NRC to get three sites licensed for new reactors. Reactor makers Westinghouse, General Electric, and Areva, which is building the Finland

plant, have filed or will soon file applications to get new designs certified by the agency. A group of eight U.S. power companies, called NuStart Energy Development, is working on applications for construction and operating licenses for the GE and Westinghouse designs.

Meanwhile, the public has become more accepting. The percentage of Americans who favor nuclear power jumped from 46% in 1995 to 70% in May, 2005, according to Bisconti Research. Some communities are actually backing new plants. In Calvert County, Md., where Constellation Energy has proposed adding a new reactor to an existing facility, "we are doing everything we can to see that kind of investment made in the county," says David Hale, president of the county board of commissioners.

There have also been technological improvements. The basic approach hasn't changed, but new designs are easier to build and operate—and better able to handle problems. They are "more safe by an order of magnitude," says MIT's Kadak. The industry expects progress on the waste front as well. New radiation exposure limits proposed by the Environmental Protection Agency for the Yucca Mountain repository in Nevada in early August could pave the way for the facility to eventually accept waste.

Add it up, and nukes no longer look like dodos. "What we are seeing is an economic change that is beginning to overwhelm the construction and licensing risks," says Thomas A. Christopher, CEO of Framatome ANP Inc., a unit of France's Areva. A new 1,900-MW plant is expected to cost at least \$1.5 billion. That compares with \$1.2 billion for a new coal plant or \$500 million for a gas-fired facility, which is quicker to build. But utilities have learned to run reactors more efficiently, making existing nukes cheap producers of power.

Now they figure that with natural gas prices tripling and coal prices doubling over the past five years, new make plants will be gold mines. "What we have to do is build the first two to six plants and prove to Wall Street that we can do it on schedule," says Entergy's Keuter. If that happens, the mid-21st century could be a new Atomic Age. ■

—By John Gary in Washington, with bureau reports

## Nukes: Gaining Acceptance

Are you in favor of nuclear power as a source of electricity?

1995

2005

46%

70%

Based on telephone surveys of 1,000 adults, with a margin of error of plus or minus 3 percentage points. Data: Bisconti Research



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# Nuclear Power in the News



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# Nuclear Power in the News

Money & Business

## A NEW LOOK AT NUKES

Energy firms push to build reactors as natural gas prices soar



By James M. Pothokoulis

It's probably a bit early for the executives at Entergy to look at the bright side of Hurricane Katrina. After all, the New Orleans-based power company is still working feverishly to restore power to hundreds of thousands of its customers in the storm-ravaged region. But there is some good news out there, such as the lack of damage to its Waterford nuclear plant in St. Charles Parish, about 30 miles east of the Crescent City. The impending arrival of Katrina forced Entergy to declare a precautionary "annual event" and shut down the reactor. The company got word from the Nuclear Regulatory Commission two weeks later that it was free to fire Waterford back up. But the ultimate impact of Katrina on the nuclear power industry is likely to be

far more extensive than a brief shutdown in a single reactor. Damage to natural gas facilities on the Gulf Coast sent high natural gas prices even higher, and a second straight year of double-digit price increases is likely for most regions in the country. And even before Katrina, the rising cost of natural gas—plus concerns about increased regulation of greenhouse gas emissions—was making energy executives take a fresh look at building new nuclear plants to meet the nation's growing thirst for energy. "This country will need more nuclear plants, and it's going to need a bunch of them," says John Rowe, CEO of Chicago-based Exelon, owner of 17 nuclear plants in Illinois, New Jersey, and Pennsylvania. Rowe adds that over the next 35 years the portion of the nation's electricity generated by nuclear power could grow to 30 or 40 percent, up from the 20 percent generated today by

104 reactors. That would mean dozens of new nuclear power plants.

The last reactor to come on line in the United States was the Tennessee Valley Authority's Watts Bar reactor in May 1996—after 24 years of construction during which the Three Mile Island accident, increasing government regulation, cost overruns, environmental protests, and the Chernobyl disaster helped put the industry into suspended animation. But this week, a consortium of nuclear power companies called NuStart Energy Development—including Exelon and Entergy—will announce which locations it has chosen as part of the group's applications to the Nuclear Regulatory Commission for the construction of and operating licenses for a new commercial reactor. New reactors could be powering up within a decade.

The federal government has been

plenty eager to kick-start the moribund industry. Just last month, President Bush signed the Energy Policy Act of 2005, which contains guarantees and incentives including \$2 billion to cover possible delays at as many as six new nuclear plants and annual production tax credits. More important, perhaps, Congress extended the five-decade-old Price-Anderson Act through 2013, limiting operator liability in the event of an accident. The new legislative action follows Bush's Nuclear Power 2010 Initiative, launched in 2003, which promoted public-private partnerships to spur new reactor construction.

Yet all these government nudges might be going for naught were it not for the rising price of natural gas, which has more than tripled since 1999. At present, natural gas accounts for about 17 percent of U.S. electrical generation, be-

POWERED UP. An Exelon nuclear plant about 90 miles west of Chicago

hind coal (51 percent) and nuclear (20 percent). But those numbers underestimate the growing importance of natural gas in the nation's power supply. An estimated 90 percent of power plants under construction are fired by natural gas, according to the Natural Gas Supply Association. Gas-fired plants are cheaper and faster to build than coal facilities, and they produce lower emissions. But with costs soaring, nuclear has been looking more economically attractive. "Natural gas prices drive electric prices in the whole nation, and they don't look like they are going down anytime soon," says Dan Kruter, Entergy's head of nuclear business development.

Deliberate speed. Yet it's tough to find executives willing to publicly commit to building a new reactor as soon as possible, even those who are part of the NuStart coalition. "What we have said is that we want to have the option to have one on line by 2015," says Luo Long, technical support chief for the nuclear subsidiary of Southern Co., which operates nuclear plants in Alabama and Georgia. "When you have to invest 3 or 4 billion dollars, you want to delay as long as possible." Even Entergy's Kruter, who describes his company as "leading the pack" in getting a new reactor built, says it will take until 2010 to get all the necessary federal approvals, and then "we'll see what market conditions are and what money the feds have appropriated." If things look like a go, it will still be another four or five years before a reactor is operating.

Wall Street is worried about protests. If a company moves to build a new reactor, investors fear that environmental groups will quickly launch an aggressive campaign against it. "With nuclear, the main opposition point is going to be the disposal of nuclear fuel," says Paul Fremont, an analyst at Jeffrey & Co. "I would guess that politics on nuclear will get very ugly." At the center of the waste dispute is the federal government's controversial plan to transport spent nuclear fuel and high-level radioactive waste across the country and permanently store it at its repository in Yucca Mountain, Nev. Exelon's Rowe says the waste disposal issue, which is still before regulators and the courts, must pass what he

calls the "cocktail test." "Unless I can tell a neighbor whom the nuclear fuel is going to go," he says, "I am reluctant to build a new generation of nuclear plants."

Yet, ironically, environmental concerns may also help nuclear companies get new reactors approved. Nuclear plants produce no greenhouse gases, which many scientists believe are warming the lower atmosphere. "I definitely think of nuclear power as a hedge against concerns about global warming and possible carbon restrictions," says Kruter. "I don't have a crystal ball, but two things I know for sure are that oil and gas are only going to get more expensive and environmental regulations are only going to get stricter and stricter—and neither is very positive."

One possible regulatory outcome is a "carbon tax" on energy sources that emit carbon dioxide, like coal, oil, and natural gas. Indeed, some nuclear executives raise the possibility of a "grand compromise" between environmentalists and the nuclear industry where, in exchange for perhaps a carbon tax, the environmental groups would drop their opposition to nuclear power.

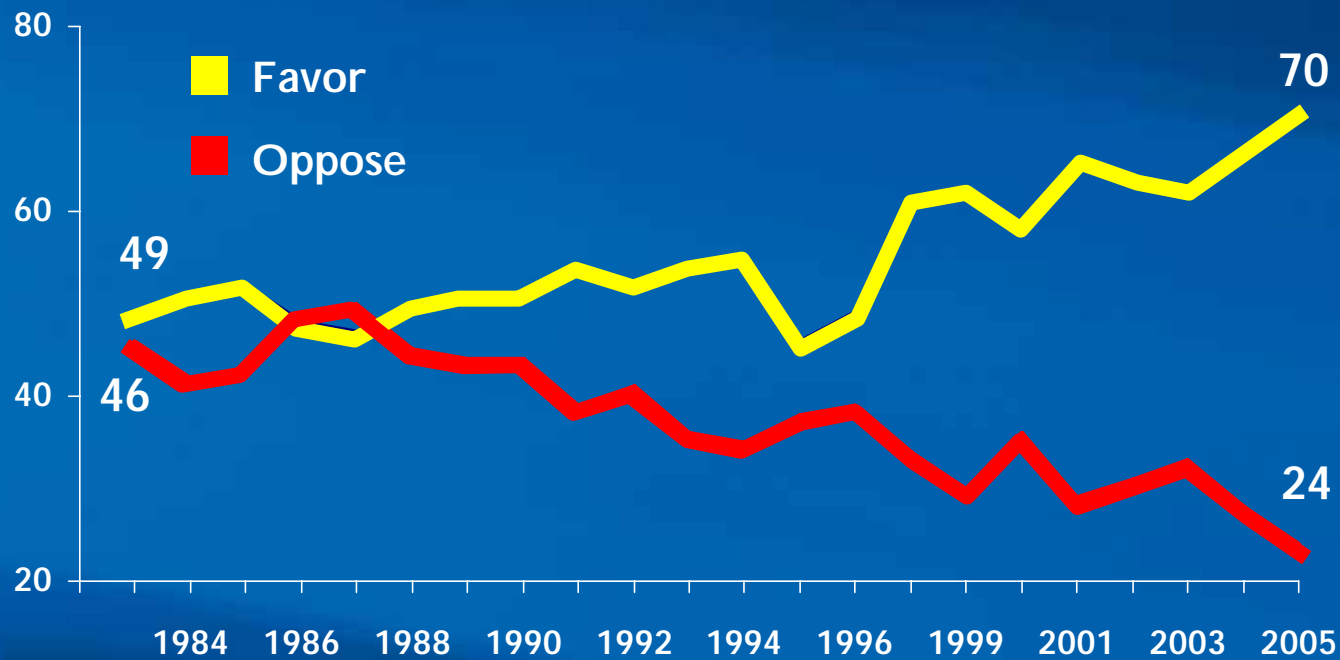
Some environmentalists say nuclear power may have a place in the nation's future energy mix. "Climate change has a chance of overwhelming a lot of other systems, and we have to be open to every low-carbon approach," says Steve Cochran, director of strategic communications at Environmental Defense. One test of the grand-compromise scenario came this summer when the U.S. Senate voted on a bill sponsored by Arizona Republican John McCain and Connecticut Democrat Joe Lieberman to curb carbon dioxide emissions. In 2003, the proposal was defeated by a 53-to-43 vote. This summer, the bill resurfaced with an amendment including subsidies for the nuclear power industry in an attempt to garner conservative support for limits on greenhouse gas emissions. But with the new pro-nuclear amendment, many green groups withdrew their support, as did several Democratic senators. The result: an even more lopsided 60-to-38 defeat. "This was a real practical test for the grand compromise, but it was a complete failure," Cochran says.

Still, any future nuclear protest might be undercut by a lack of public support. There's polling evidence that the average American is growing more accepting of nuclear power. A pre-Katrina poll last month by Rasmussen Reports found that 55 percent of those surveyed supported building new nuclear power plants vs. 24 percent against. If energy prices stay high, future chunks of "no nukes" might someday be overwhelmed by shouts of "go nukes." ■



# 70% Favor Use of Nuclear Energy

*(Trend 1983-2005, Annual Averages Until 2004)*



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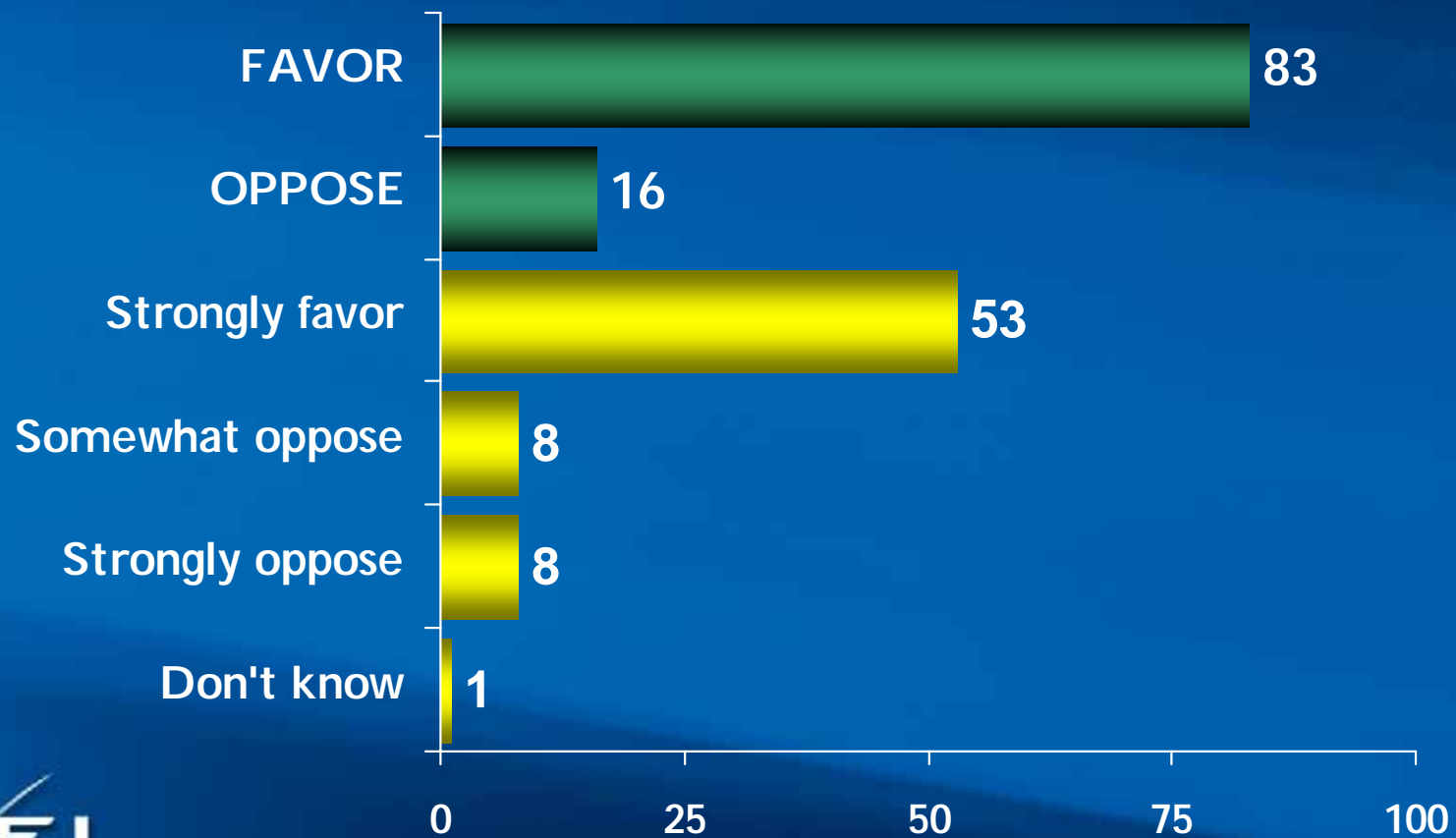


# First U.S. Survey of Nuclear Power Plant Neighbors

- Residents within 10-mile radius of 64 plant sites
- 1,152 total respondents
- Electric company employees excluded



# 83% of Plant Neighbors Favor Nuclear Energy



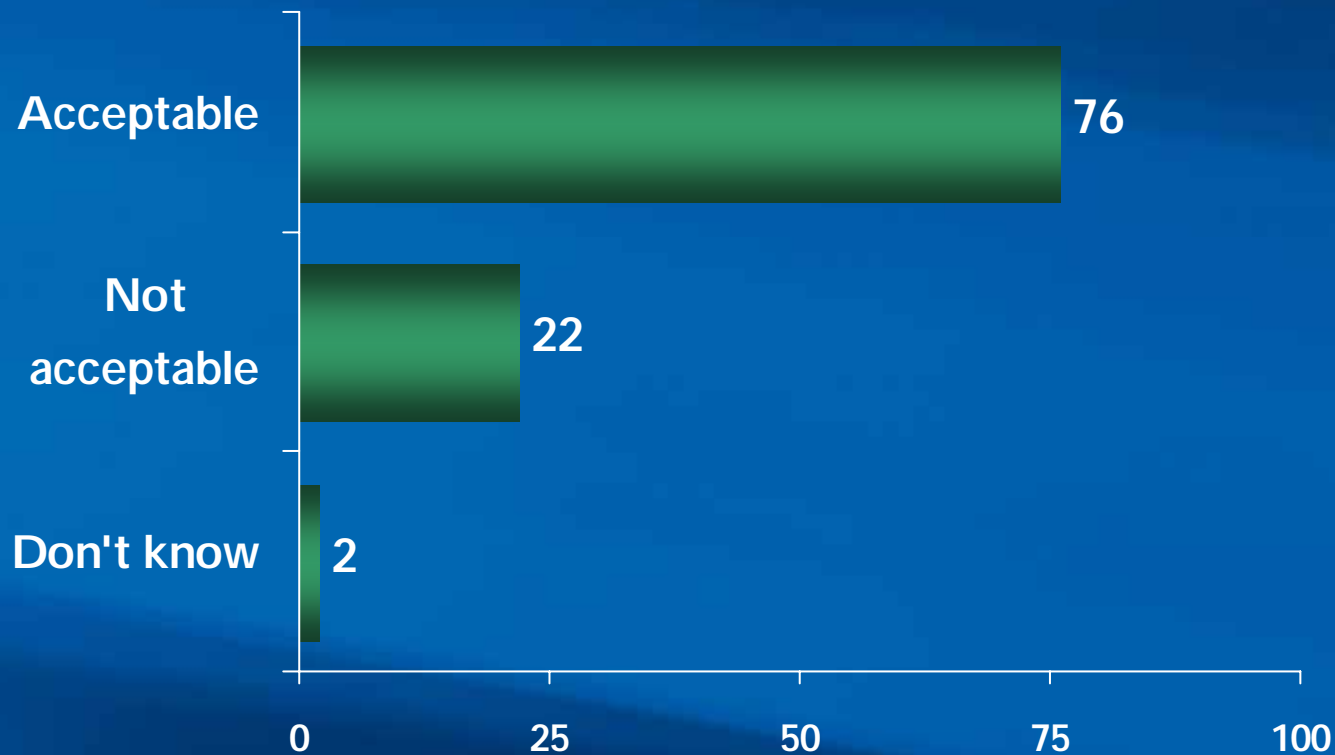
# 87% of Plant Neighbors Have Favorable Impression of Plant



# 85% of Plant Neighbors Consider the Plant Safe



# 76% of Plant Neighbors Said New Reactor Is Acceptable



# Supporters Engaged Nationally and Locally



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# Keeping the Momentum

- Consistent, proactive industry-wide communications with key audiences
- Continued engagement of supporters and those with shared interests
- Shared lessons to speed up licensing
- Continued focus on safety as the top priority

