Sea-level rise: How South Florida can cope with its 'wicked problem' | Opinion

By TOM O'HARA
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More sunny-day flooding, like Miami Beach faces during king tides, is expected in South Florida due to sea-level rise. (Courtesy to Sun Sentinel)

To raise awareness about sea-level rise, the editorial boards of the South Florida Sun Sentinel, Miami Herald and Palm Beach Post, along with WLRN Public Media, are collaborating on a series of editorials, columns and reports called "The Invading Sea."

As part of that unprecedented collaboration, Tom O'Hara, editor of "The Invading Sea," interviewed Colin Polsky, a professor of geosciences and director

of the Florida Center for Environmental Studies at Florida Atlantic University.

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Here are the questions and answers from the interview:

Q. Is the sea level going to rise faster than the **Southeast Florida Regional Climate Change Compact estimates**? (By 2060 about 2 feet higher than the 1992 mean sea level). You keep reading about Greenland's ice and Antarctica's ice falling into the ocean at faster and faster rates.

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A. I think their estimates are probably on target, but the pace should accelerate thereafter. The result is that when the people born today are 65, our region will be

much wetter than it is today.

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Q. How much money would governments have to spend on pipes, floodgates, seawalls and pumps to keep South Florida habitable for millions of people in 2060? I think people would be happy to live in the region even if there's nuisance flooding 45 days a year. I assume we can install enough infrastructure to keep us comfortable even after the sea level has risen 2 feet.

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A. You may not like my academic answer, but here it is: there's no single answer to your question, for several reasons.

First, what do we mean by habitable? Habitable for whom? Is 45 days per year of nuisance flooding the defining criterion for "habitable"? The important thing to remember is that neighborhoods will experience different levels of the number of days of nuisance flooding per year. And different neighborhoods and households may have different tolerances for water in the streets. We should ask residents how many days per year of nuisance flooding they would tolerate.

So the most obvious scenario is a future where we keep most of the city below some threshold of days of nuisance flooding per year, while recognizing that some neighborhoods may be much higher than that (the numbers need to be determined

after public input), and that the infrastructure costs in those most vulnerable neighborhoods may be too much for the public to stomach.

To speak to your question about total cost, it depends on the geographic extent we are looking at. I assume you are talking about the four counties.

In that case, we're looking at probably minimally tens of billions of dollars for a comprehensive rebuild and redesign. The people working in the Chief Resilience Officers' offices for the four counties could probably produce a good back-of-the envelope estimate.

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There are also inexpensive things we can do – we should do those first. The good news is that some of our local governments are already taking these low-hanging fruit actions. But most of our local governments are not – yet.

Q. Will solar and wind and other alternative energy sources get so cheap in the next 20 years that humans will begin to sharply reduce the amount of greenhouse gasses we're producing? Or will things get worse because China and India will keep burning enormous amounts of coal?

A. I think the future holds a lot of positive potential. For one thing, China and India are developing copious capacities for renewable energy production.

On the other hand, our own country is now making it more difficult for those technologies to penetrate the market. So yes, to make a good dent in emissions, we

need to rely on technology, and on improving technology, but I think we already have the technology that we need to "bend the curve" dramatically.

Unfortunately, in our country our Federal leadership now lacks the political will to support bending that curve. In fact, they are taking us backwards.

This is bad for multiple reasons. For instance, burning fossil fuels not only warms the planet, but also degrades human health. (Which would you rather breathe, exhaust from an internal combustion engine, or an electric car?)

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Both effects – the warming and the human health effects – are negatives for our GDP. Moreover, there are a lot of jobs to add to our workforce in renewable energy. By turning our backs on the renewable energy economy, we're simply leaving chunks of GDP growth on the table, for another country to take first.

On the other hand, the silver lining is that consumer preferences may overcome the inertia of our political leadership. In short, this is a time of great dynamism in the emissions space.

What the net effect of these opposing trends will be is anyone's guess. I suspect the leaders in renewable energy (China and Denmark, to name just two) will reap major financial benefits as they export their technology and know-how to other countries. The U.S. will then have to play catch-up. I prefer us to be leaders not followers.

Q. Will we have to get our fresh water from desalination plants 30 years from now? If so, why? If so, will we be able to afford it?

A. There is plenty of freshwater in our aquifers. The question is, how much will it cost us to get it?

As the saltwater front continues to move west from the ocean, we may have to drill new drinking water wells. That is very expensive. It might be so expensive that desalination will seem like a reasonable alternative.

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That question hinges also on whether desalination costs come down due to some unexpected improvement in technology.

Right now, desalination plants are fairly expensive to build, and they require a lot of energy to operate. So building one of those plants that runs on fossil fuels comes at a cost of increased emissions.

So you see everything is connected to everything else in this conversation. It is what we call a wicked problem. It requires transdisciplinary collaborations and solutions.

One piece of good news is that Broward County has already implemented aggressive programs to monitor and respond to encroaching saltwater in our aquifers.

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