Strategies for 21st Century Risk Management and Climate Change Communication

October 31, 2019
Abby Sullivan,
Environmental Scientist,
Philadelphia Water Department
Acknowledgement:

- Julia Rockwell, Manager of the Climate Change Adaptation Program, Philadelphia Water Dept.
- Kelly Anderson, Manager of the Watershed Protection Program, Philadelphia Water Dept.
- Sebastian Malter, Engineer, CDM Smith (formerly Philadelphia Water Dept).
- The Water Utility Climate Alliance
  - Laurna Kaatz, Climate Program Manager, Denver Water (WUCA Chair)
  - Keely Brooks, Climate Science and Adaptation Lead, Southern Nevada Water Authority
  - Heidi Roop, Lead Scientist for Science Communication, Climate Impacts Group, U. of Washington
Climate Change, a Super Wicked Problem

**Wicked Problem** (Rittel & Webber, 1973)

Wicked problems lack a simplistic, straightforward solution because they are difficult to define, have many interdependencies, have numerous stakeholders and opinions, involve economic burden and are interconnected with other problems (Rittel & Webber, 1973).

**Super Wicked Problem** (Levin et al., 2007)

A problem with even further exacerbating features:

1. Time is running out
2. Those who cause the problem also seek to provide a solution
3. The central authority needed to address the problem is weak or non-existent
4. Irrational discounting occurs, pushing responses into the future
Climate Change Communication Challenges

- Complex
- Lack of understanding
- Many audiences, many responses
- Viewpoint based on tribe
- Cognitive dissonance
Climate Change Communication Challenges

My desire to be well-informed is currently at odds with my desire to remain sane.

Cartoon by David Sipress
Climate Change Communication Challenges

Most People Think that climate change will harm Americans but they don’t think it will happen to them.

The (mostly) good news...

Roughly 7 in 10 Americans think global warming is happening.
Communication is the key!

About six in ten Americans (63%) say they “rarely” or “never” discuss global warming with family and friends.

63%

Source: Leiserowitz, et al., 2019

Katherine Hayhoe
climate scientist/communicator extraordinaire
Internal Communications and Mainstreaming

Climate Change can be really overwhelming!
Internal Communications and Mainstreaming

Management/leadership style

ideological separations

large staff

physical separations

political separations
Internal Communications and Mainstreaming

- Management/leadership style
- ideological separations
- large staff
- physical separations
- political separations
# Internal Communications and Mainstreaming

## Sea Level Rise

<table>
<thead>
<tr>
<th>What could be affected?</th>
<th>Units affected?</th>
<th>Programs, plans &amp; processes affected?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Structural systems</strong></td>
<td>• Planning &amp; Research</td>
<td>• Wastewater Master Plan</td>
</tr>
<tr>
<td>• Drinking water treatment plants</td>
<td>• Office of Watersheds</td>
<td>• Water Master Plan</td>
</tr>
<tr>
<td>• Wastewater treatment plants</td>
<td>• GSI Implementation</td>
<td>• Operations (treatment, pumping)</td>
</tr>
<tr>
<td>• Pumping stations</td>
<td>• Operations</td>
<td>• Storm Flood Relief Program</td>
</tr>
<tr>
<td>• Stormwater system (CSO &amp; MS4)</td>
<td>• Design</td>
<td>• Capital Planning Program</td>
</tr>
<tr>
<td>• Wastewater drainage system</td>
<td>• Emergency Management</td>
<td>• Linear Asset Management</td>
</tr>
<tr>
<td>• Electrical equipment (all facilities)</td>
<td></td>
<td>• Source Water Protection Program</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Green City Clean Waters (H&amp;H modeling, GSI)</td>
</tr>
<tr>
<td><strong>Non-Structural systems</strong></td>
<td></td>
<td>• Emergency Planning &amp; Response</td>
</tr>
<tr>
<td>• Source water quality</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Source water quantity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Energy demand</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Internal Communications and Mainstreaming

- Identify champions
- Form a working group
- Embed climate change into existing programs & plans
# Internal Communications and Mainstreaming

<table>
<thead>
<tr>
<th>Unit</th>
<th>Division</th>
<th>Staff member</th>
<th>email</th>
<th>phone</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning and Engineering</td>
<td>Facility Design</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Engineering - Design Branch</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Water/Source Planning</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Field Operations</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Conveyance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Waste water Treatment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Waste Water Treatment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Emergency Response</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Water Treatment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Field Operations</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Planning &amp; Environmental Services</td>
<td>Planning and Research - capital planning and energy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Planning and Research</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>GSW - Source Water / Water Master Plan</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Planning and Research - Waste water planning</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Planning and Research - Water Water Planning</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Planning and Research - Waste Water Planning</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>GSI Implementation - GSI maintenance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>GSI Implementation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>GSI Implementation - Ecological Restoration Unit</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>GSI Implementation - Ecological Restoration Unit</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>GOW - H &amp; H Modeling Group</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>GOW - H &amp; H Modeling Group</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bureau of Laboratory Services</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bureau of Laboratory Services</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Internal Communications and Mainstreaming

Talk about climate change in the context of what people already know.

Climate change amplifies and multiplies issues we already deal with.
Internal Communications and Mainstreaming

Educate people, have discussions, get them involved

- Provide the basics
- Cater your presentations
- Give people ownership
- Let them suggest solutions
- Getting stakeholders to the table is the most important part!
Principle #1
Warm air holds more moisture than cold air. “Atmospheric holding capacity”

Principle #2
Warm air increases evaporation and transpiration rates

Principle #3
Temperature changes influence global circulation patterns (atmosphere & ocean)

Source: Water Research Foundation Project 4381
Best Practices – external communication

Know your audience (do your homework!)

- Who is your target audience?
- Create audience profiles
- What matters to them (values)?
- If you don’t know your audience:
  - Look at Yale climate opinion maps
  - Survey the audience: raise of hands
Best Practices – external communication

- WHO IS THIS AUDIENCE?
- WHAT IS OUR COMMUNICATION GOAL?
- WHY IS THIS AUDIENCE IMPORTANT?
- WHAT ARE THEIR PERSPECTIVES?
- WHAT ARE KEY MESSAGES?
- WHAT IS OUR COMMUNICATION STRATEGY
- WHAT TOOLS CAN WE USE?
Best Practices – external communication

Knowing your audience allows you to frame your message

People connect on values:

- Family
- Health
- Our responsibility – (to children & environment)
- Tell stories
- Convey how climate change will impact them (without necessarily using the words “climate change”)
Knowing your audience allows you to frame your message

When talking to Republicans, promote renewable energy by talking about energy independence and freedom of choice, not by linking it to climate change.

Debbie Dooley, Tea Party Member
Lessons learned – external communication

Language has weight. You don’t need to use the words “climate change”

- Belief Bias
- People feel attacked when beliefs are challenged
- “Extreme events” or “changing conditions”
Lessons Learned – external communication

It’s important to listen and learn. Building trust takes time and effort...

- Take the time to talk to people
- Listen to their concerns
- People want to be heard
Best Practices – external communication

Simple, clear, informative, repeated messages

• Never assume, but don’t talk down
• Simple graphs
• Communicate on a human scale
• Make the science and statements meaningful
• 27 words or less

Source: Philadelphia Water Department
Lessons Learned – external communication

The messenger matters

• Convey through a trusted community member
• Send information from trusted sources
• Engage through existing channels
• Channel the power of groups
• Meet people where they are

I didn’t say it, they did

[Logos of NASA, NOAA, ASCE, American Water Works Association, United States Global Change Research Program, Moody’s, and Standard & Poor’s]
97% of them!

**IT'S REAL IT'S US EXPERTS AGREE IT'S BAD THERE'S HOPE**

Global warming is happening.

Human activity is the main cause.

There's scientific consensus on human-caused global warming.

The impacts are serious and affect people.

We have the technology needed to avoid the worst climate impacts.

Source: Yale/George Mason | Graphic: Cook et al., 2019
Emotions....

- Common wisdom says keep emotion out of messaging
- People shut down when they feel it is beyond hope
- Majority do not want emotion in climate change messages

However....

- More people are persuaded to take action when the message was conveyed with emotion
- There are differences in reaction based on gender, age, etc.

Source: Bloodhart, Swim & Dicicco (2019) in the journal *Science and Environmental Communication*
Keeping people engaged

- Don’t read your notes!
- Don’t use a lot of text!
- Make eye contact
- Practice your presentation
THANKS

Abby Sullivan, Environmental Scientist
Climate Change Adaptation Program
Philadelphia Water Department

abby.sullivan@phila.gov
215-686-9423