Sea Level Rise Public Engagement Session

COMMENT FORM

Your answers to these questions will help the Advisory Committee finalize its list of options for preparing Delaware for sea level rise.

Please answer as many of the questions as your time allows, and feel free to provide additional comments on another sheet or to the contacts listed on the back of this form.

For Questions 1-6, please refer to the document provided at the public engagements sessions entitled, "***Options for Preparing Delaware for Sea Level Rise: A Draft for Discussion at Sea Level Rise Public Engagement Sessions, February 2013***" for the list of proposed adaptation options from the Sea Level Rise Advisory Committee.

1. **How do you think government agencies could better work together to address sea level rise?** (See *Options for Preparing for Sea Level Rise* #1 - #9)
   Which options do you support or not support? Are there other ideas that you can share with us?

Better education in science - Sussex county seems to be extremely backward, with little ideas about science

2. **How do you think planning and permitting for sea level rise adaptation could be improved?** (See *Options for Preparing for Sea Level Rise* #10 - #18)
   Which options do you support or not support? Are there other ideas that you can share with us?

Do not rebuild all beaches - Make people aware of loss they will suffer

3. **How do you think policies for development and natural resources could be improved to adapt to sea level rise?** (See *Options for Preparing for Sea Level Rise* #19 - #32)
   Which options do you support or not support? Are there other ideas that you can share with us?

→ In the next century people must move inland.

4. **How do you think awareness of sea level rise impacts could be increased?** (See *Options for Preparing for Sea Level Rise* #33 - #36)
   Which options do you support or not support? Are there other ideas that you can share with us?

Additional questions on other side →

Sea Level Rise Public Engagement Session

COMMENT FORM

5. **How do you think information about sea level rise could be improved and made available?** (See *Options for Preparing for Sea Level Rise* #37 - #55)
Which options do you support or not support? Are there other ideas that you can share with us?

6. **How do you think assistance on adapting to sea level rise could be provided?** (See *Options for Preparing for Sea Level Rise* #56 - #61)
Which options do you support or not support? Are there other ideas that you can share with us?

Restrict development near beaches.

7. **Adapting to sea level rise can be costly for individuals, businesses and governments alike. Do you have ideas about how adaptation projects should be paid for?**

They should not be paid for

8. **Do you have any additional information or concerns you would like to share about flooding or sea level rise? Has it personally impacted you or your community?**

In 100 yrs a large % of Md + DE will be under water.
A warmer planet will cause more and more energetic storms in summer and winter.
Sussex county council is an incredibly ignorant bunch. Development should be stopped as soon as possible. However, council Sussex county has never met a development it couldn't like! I

(optional) **Name:** [redacted]

Address: [redacted]

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1. **How do you think government agencies could better work together to address sea level rise?** (See *Options for Preparing for Sea Level Rise* #1 - #9)
   Which options do you support or not support? Are there other ideas that you can share with us?

Support 2, 4, 5, 8 (minimize "creation" type solutions these often take too long to be advantageous often obsolete before they are finished
NO to 1, 3, 6, 7, 9

2. **How do you think planning and permitting for sea level rise adaptation could be improved?** (See *Options for Preparing for Sea Level Rise* #10 - #18)
   Which options do you support or not support? Are there other ideas that you can share with us?

support 10, 11, 12, 13, 14, 15, [redacted], 16, 18
create a State inundation certification certificate based on DE map, similar to flood elev cert. using Ferma maps
NO to 17.

3. **How do you think policies for development and natural resources could be improved to adapt to sea level rise?** (See *Options for Preparing for Sea Level Rise* #19 - #32)
   Which options do you support or not support? Are there other ideas that you can share with us?

Support 19, 20 a must, 21, 22, 23, 24, 26, 27, 28, 29, 30, 31, 32

NO to 25,

4. **How do you think awareness of sea level rise impacts could be increased?** (See *Options for Preparing for Sea Level Rise* #33 - #36)
   Which options do you support or not support? Are there other ideas that you can share with us?

support 34, 35, 36
use inundation maps to create a certificate similar to flood cert (see above, question 2)
No to 33

Additional questions on other side →

Sea Level Rise Public Engagement Session

COMMENT FORM

5. **How do you think information about sea level rise could be improved and made available?** (See *Options for Preparing for Sea Level Rise* #37 - #55)
Which options do you support or not support? Are there other ideas that you can share with us?

Support 37, 39, 40, 44, 46, 47 ★ a must, 48, 49, 50, 52 ★ 53, 54, 55

No to 38 - too many legal issues to be viable, 41, 42, 43, 45 51

6. **How do you think assistance on adapting to sea level rise could be provided?** (See *Options for Preparing for Sea Level Rise* #56 - #61)
Which options do you support or not support? Are there other ideas that you can share with us?

Support 56 ★ a must, 57, 58, 59.

No to 60, 61

7. **Adapting to sea level rise can be costly for individuals, businesses and governments alike. Do you have ideas about how adaptation projects should be paid for?**

Grants and a STORMWATER UTILITY!

8. **Do you have any additional information or concerns you would like to share about flooding or sea level rise? Has it personally impacted you or your community?**

Yes, I have spent many hours working on a Stormwater Master Plan for Dewey Beach that addresses Sea Level Rise!

(optional) **Name:** [redacted]

Address: [redacted]

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1. **How do you think government agencies could better work together to address sea level rise?** (See *Options for Preparing for Sea Level Rise* #1 - #9)
   Which options do you support or not support? Are there other ideas that you can share with us?
   leave government out of it & let time deal with it if it becomes necessary.

2. **How do you think planning and permitting for sea level rise adaptation could be improved?** (See *Options for Preparing for Sea Level Rise* #10 - #18)
   Which options do you support or not support? Are there other ideas that you can share with us?
   Wait & see if it's needed at all.

3. **How do you think policies for development and natural resources could be improved to adapt to sea level rise?** (See *Options for Preparing for Sea Level Rise* #19 - #32)
   Which options do you support or not support? Are there other ideas that you can share with us?
   again wait & see what happens. It's too early to know.

4. **How do you think awareness of sea level rise impacts could be increased?** (See *Options for Preparing for Sea Level Rise* #33 - #36)
   Which options do you support or not support? Are there other ideas that you can share with us?
   How much brain washing do we need?

Additional questions on other side →

Sea Level Rise Public Engagement Session

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_____
_____
_____
_____

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_____
_____
_____
_____

7. **Adapting to sea level rise can be costly for individuals, businesses and governments alike. Do you have ideas about how adaptation projects should be paid for?**

_____
_____
_____
_____

8. **Do you have any additional information or concerns you would like to share about flooding or sea level rise? Has it personally impacted you or your community?**

_____
_____
_____
_____
_____
_____
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1) Use Coastal Storm, overlay maps of already 'approved' subdivisions in Sea Level Rise Maps.

2) Activity for JHS/HS students: walk around neighborhood with their smart phones & photo areas possibly at risk.

(optional) **Name:** [redacted]

Address: [redacted]

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8. **Do you have any additional information or concerns you would like to share about flooding or sea level rise? Has it personally impacted you or your community?**

Great Program for Adaptation.
1) Wow, start a Program to Study "Mitigation"
2) Integrate 'options' of Both Adaptation & Mitigation Studies

(optional) **Name:** [redacted]

Address: [redacted]

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Sea Level Rise Public Engagement Session

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8. **Do you have any additional information or concerns you would like to share about flooding or sea level rise? Has it personally impacted you or your community?**

I have a deep concern with the option that DNREC is proposing for Remediating The NRG Coal Ash Dump - there is INADEQ Safe Water Testing for ARSENIC (DNREC's) standards quoted in their Proposal are outdated - NO CONCRETE LONG-TERM Rules are given - effects of storms & tides on leaching not adequately Addressed

(optional) **Name:** [redacted]

Address: [redacted]

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   Which options do you support or not support? Are there other ideas that you can share with us?

   #5 SEEMS CRUCIAL TO ELIMINATION
   HOW WILL YOU IMPLEMENT "RETREAT"?

2. **How do you think planning and permitting for sea level rise adaptation could be improved?** (See *Options for Preparing for Sea Level Rise* #10 - #18)
   Which options do you support or not support? Are there other ideas that you can share with us?

   START WITH #14 AND GO FROM THERE.

3. **How do you think policies for development and natural resources could be improved to adapt to sea level rise?** (See *Options for Preparing for Sea Level Rise* #19 - #32)
   Which options do you support or not support? Are there other ideas that you can share with us?

   #26 WILL BE CONTROVERSIAL AND DIFFICULT TO IMPLEMENT.

4. **How do you think awareness of sea level rise impacts could be increased?** (See *Options for Preparing for Sea Level Rise* #33 - #36)
   Which options do you support or not support? Are there other ideas that you can share with us?

   ORGANIZED EDUCATIONAL OUTREACH IS CRITICAL

Additional questions on other side →

Sea Level Rise Public Engagement Session

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   Which options do you support or not support? Are there other ideas that you can share with us?

7. **Adapting to sea level rise can be costly for individuals, businesses and governments alike. Do you have ideas about how adaptation projects should be paid for?**

   ALL NEED TO WORK TOGETHER.

   THE COAST IS A MAJOR TOURIST DRAW AND BRINGS $ INTO THE STATE, WHICH SHOULD BE PAID INTO ACTION

8. **Do you have any additional information or concerns you would like to share about flooding or sea level rise? Has it personally impacted you or your community?**

   VERY WORRIED ABOUT INSURANCE, BOTH HOMEOWNER POLICY AND FEMA, CONTINUING TO BE OFFERED THE VERA-RENTAL HOME.

(optional) **Name:** _____

Address: _____

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1. **How do you think government agencies could better work together to address sea level rise?** (See *Options for Preparing for Sea Level Rise* #1 - #9)
   Which options do you support or not support? Are there other ideas that you can share with us?
   Local communities are essential in supporting anything you try to do, getting them to support any initiatives is key. Education, outreach is extremely important to local community and more importantly our citizens.

2. **How do you think planning and permitting for sea level rise adaptation could be improved?** (See *Options for Preparing for Sea Level Rise* #10 - #18)
   Which options do you support or not support? Are there other ideas that you can share with us?
   It really takes a collaboration at all levels of government. FEMA pushes "climate change" and SLR adaptation, but many action options are restricted to historical or current threats (does not consider SLR) "catch 22"

3. **How do you think policies for development and natural resources could be improved to adapt to sea level rise?** (See *Options for Preparing for Sea Level Rise* #19 - #32)
   Which options do you support or not support? Are there other ideas that you can share with us?
   I think the key is targeting policies that results in an "Informed Public". SLR statements included in all property sales/leases.

4. **How do you think awareness of sea level rise impacts could be increased?** (See *Options for Preparing for Sea Level Rise* #33 - #36)
   Which options do you support or not support? Are there other ideas that you can share with us?
   Signage in high risk areas and outreach!

Additional questions on other side →

Sea Level Rise Public Engagement Session

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5. **How do you think information about sea level rise could be improved and made available?** (See *Options for Preparing for Sea Level Rise* #37 - #55)
   Which options do you support or not support? Are there other ideas that you can share with us?

Mailings, websites, workshops etc

6. **How do you think assistance on adapting to sea level rise could be provided?** (See *Options for Preparing for Sea Level Rise* #56 - #61)
   Which options do you support or not support? Are there other ideas that you can share with us?

Letting communities know what can be done, how it can be done, how it can be funded (even if it is local) Surveys/studies by trained professionals in high risk areas and areas that may become high risk with in 20 years.

7. **Adapting to sea level rise can be costly for individuals, businesses and governments alike. Do you have ideas about how adaptation projects should be paid for?**

Existing Federal programs designed for flood mitigation Additional Funding from states as incentive.

8. **Do you have any additional information or concerns you would like to share about flooding or sea level rise? Has it personally impacted you or your community?**

(optional) **Name:** _____

Address: _____

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   Which options do you support or not support? Are there other ideas that you can share with us?

   1-9 must be adopted.

2. **How do you think planning and permitting for sea level rise adaptation could be improved?** (See *Options for Preparing for Sea Level Rise* #10 - #18)
   Which options do you support or not support? Are there other ideas that you can share with us?

   All 10-18

3. **How do you think policies for development and natural resources could be improved to adapt to sea level rise?** (See *Options for Preparing for Sea Level Rise* #19 - #32)
   Which options do you support or not support? Are there other ideas that you can share with us?

   All 19-32

4. **How do you think awareness of sea level rise impacts could be increased?** (See *Options for Preparing for Sea Level Rise* #33 - #36)
   Which options do you support or not support? Are there other ideas that you can share with us?

   All 33-36

Additional questions on other side →

Sea Level Rise Public Engagement Session

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Which options do you support or not support? Are there other ideas that you can share with us?

All 37-55 Especially #47 storm surge

6. **How do you think assistance on adapting to sea level rise could be provided?** (See *Options for Preparing for Sea Level Rise* #56 - #61)
Which options do you support or not support? Are there other ideas that you can share with us?

All 56-61

7. **Adapting to sea level rise can be costly for individuals, businesses and governments alike. Do you have ideas about how adaptation projects should be paid for?**

1% Hotel Tax on Tourism
Carbon Tax is most fair.

8. **Do you have any additional information or concerns you would like to share about flooding or sea level rise? Has it personally impacted you or your community?**

Option 34 Education/Outreach is Key.
In communities at risk, install signs showing height of water (flood level).

(optional) **Name:** [redacted]

Address: [redacted]

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   Which options do you support or not support? Are there other ideas that you can share with us?

MAKE SURE SOMEONE from Sussex County Tourism Delaware tourism is on the Advisory Comm. to make certain that appropriate messaging is developed on how to combat the fears that will emerge from this discussion.

2. **How do you think planning and permitting for sea level rise adaptation could be improved?** (See *Options for Preparing for Sea Level Rise* #10 - #18)
   Which options do you support or not support? Are there other ideas that you can share with us?

Local costal towns will need help with this as such discussions will impact real estate sales and values and the marketing of our beautiful beach towns. We will need help!

3. **How do you think policies for development and natural resources could be improved to adapt to sea level rise?** (See *Options for Preparing for Sea Level Rise* #19 - #32)
   Which options do you support or not support? Are there other ideas that you can share with us?

Delaware tourism is currently promoting our costal towns - but as this SEA LEVEL discussion and planning becomes more pronounced - we will have major challenges.

4. **How do you think awareness of sea level rise impacts could be increased?** (See *Options for Preparing for Sea Level Rise* #33 - #36)
   Which options do you support or not support? Are there other ideas that you can share with us?

Additional questions on other side →

Sea Level Rise Public Engagement Session

COMMENT FORM

5. **How do you think information about sea level rise could be improved and made available?** (See *Options for Preparing for Sea Level Rise* #37 - #55)
   Which options do you support or not support? Are there other ideas that you can share with us?

_____
_____
_____
_____

6. **How do you think assistance on adapting to sea level rise could be provided?** (See *Options for Preparing for Sea Level Rise* #56 - #61)
   Which options do you support or not support? Are there other ideas that you can share with us?

_____
_____
_____
_____

7. **Adapting to sea level rise can be costly for individuals, businesses and governments alike. Do you have ideas about how adaptation projects should be paid for?**

_____
_____
_____
_____

8. **Do you have any additional information or concerns you would like to share about flooding or sea level rise? Has it personally impacted you or your community?**

_____
_____
_____
_____
_____
_____
_____

(optional) **Name:** _____

Address: _____

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1. **How do you think government agencies could better work together to address sea level rise?** (See *Options for Preparing for Sea Level Rise* #1 - #9)
   Which options do you support or not support? Are there other ideas that you can share with us?
   Establish a SLR Working Group - Networking, Information Sharing

2. **How do you think planning and permitting for sea level rise adaptation could be improved?** (See *Options for Preparing for Sea Level Rise* #10 - #18)
   Which options do you support or not support? Are there other ideas that you can share with us?
   ~~Draft~~ Create new Laws Giving DNREC Authority to Regulate Development w/i 100 yr Flood Plain

3. **How do you think policies for development and natural resources could be improved to adapt to sea level rise?** (See *Options for Preparing for Sea Level Rise* #19 - #32)
   Which options do you support or not support? Are there other ideas that you can share with us?
   Create Non-Tidal Wetlands Protections for DNREC Plan Authority to encourage/manage transitions/new lands

4. **How do you think awareness of sea level rise impacts could be increased?** (See *Options for Preparing for Sea Level Rise* #33 - #36)
   Which options do you support or not support? Are there other ideas that you can share with us?
   See #2 above.
   PSA's

Additional questions on other side →

Sea Level Rise Public Engagement Session

COMMENT FORM

5. **How do you think information about sea level rise could be improved and made available?** (See *Options for Preparing for Sea Level Rise* #37 - #55)
   Which options do you support or not support? Are there other ideas that you can share with us?

Attempt to Develop a central Clearing house w/i DNREC. w/ Targeted areas See Residents, Communities, Businesses & NFP's

6. **How do you think assistance on adapting to sea level rise could be provided?** (See *Options for Preparing for Sea Level Rise* #56 - #61)
   Which options do you support or not support? Are there other ideas that you can share with us?

See #2 & Provide Timely Consultation, Set Permit Fees high enough esp for Bus. Businesses/Developers to help Sustain Programs

7. **Adapting to sea level rise can be costly for individuals, businesses and governments alike. Do you have ideas about how adaptation projects should be paid for?**

See #6 above. Developers/users should Pay (theory) Permit/Consultation Fees.

8. ~~**Do you have any additional information or concerns you would like to share about flooding or sea level rise? Has it personally impacted you or your community?**~~

General Comments

Number & Depth of Options Too Ambitious
Prioritize & Identify Realistic Goals

(optional) **Name:** _____

Address: _____

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1. **How do you think government agencies could better work together to address sea level rise?** (See *Options for Preparing for Sea Level Rise* #1 - #9)
   Which options do you support or not support? Are there other ideas that you can share with us?
   If past inaction and conflict between agencies is any indicator, the state will spend more effort avoiding responsibility than taking any of these options. Specifically, DNR and DOT need to work together.

2. **How do you think planning and permitting for sea level rise adaptation could be improved?** (See *Options for Preparing for Sea Level Rise* #10 - #18)
   Which options do you support or not support? Are there other ideas that you can share with us?
   I do not see much private sector involvement. There are Chambers of Commerce? Tourism bureaus? Trade associations of water engineers, developers, and businesses?

3. **How do you think policies for development and natural resources could be improved to adapt to sea level rise?** (See *Options for Preparing for Sea Level Rise* #19 - #32)
   Which options do you support or not support? Are there other ideas that you can share with us?
   The same preparedness necessary for SLR is beneficial for emergency or storm / flood preparedness. People get the message quicker if their immediate safety is at stake.

4. **How do you think awareness of sea level rise impacts could be increased?** (See *Options for Preparing for Sea Level Rise* #33 - #36)
   Which options do you support or not support? Are there other ideas that you can share with us?
   We just purchased a home. Other than getting assurance that it is not in a flood plain, we got no answers to our questions about storm surge or drainage. No one ever mentioned sea level rise or land sinkage.

Additional questions on other side →

Sea Level Rise Public Engagement Session

COMMENT FORM

5. **How do you think information about sea level rise could be improved and made available?** (See *Options for Preparing for Sea Level Rise* #37 - #55)
   Which options do you support or not support? Are there other ideas that you can share with us?
   Set up information stations where people gather — boardwalks, parks, town plazas — and show the potential impact at that precise spot.

6. **How do you think assistance on adapting to sea level rise could be provided?** (See *Options for Preparing for Sea Level Rise* #56 - #61)
   Which options do you support or not support? Are there other ideas that you can share with us?
   This seems like an insurable risk. Can a public insurance pool be set up, funded from land taxes and development permits?

7. **Adapting to sea level rise can be costly for individuals, businesses and governments alike. Do you have ideas about how adaptation projects should be paid for?**

8. **Do you have any additional information or concerns you would like to share about flooding or sea level rise? Has it personally impacted you or your community?**
   To whom does the SLR advisory Committee report? I suggest either the governor or a committee of the State legislature.

(optional) **Name:** [redacted]

Address: [redacted]

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Sea Level Rise Public Engagement Session

COMMENT FORM

5. **How do you think information about sea level rise could be improved and made available?** (See *Options for Preparing for Sea Level Rise* #37 - #55)
   Which options do you support or not support? Are there other ideas that you can share with us?

This is quite a comprehensive list and I support All of them. Any associated with infrastructure in my opinion should be highest on the priority list

6. **How do you think assistance on adapting to sea level rise could be provided?** (See *Options for Preparing for Sea Level Rise* #56 - #61)
   Which options do you support or not support? Are there other ideas that you can share with us?

I support All. Item #56 is especially important

7. **Adapting to sea level rise can be costly for individuals, businesses and governments alike. Do you have ideas about how adaptation projects should be paid for?**

Having governments to pay for All these projects would be nice, but impossible. Raising taxes would help but be unfair to those tax payers who are not effected by sea rise. Possibly sharing costs with the government might be a worthwhile for people impacted Approach. We at Cape Shores have paid for All the sand replenishment on the public beaches in front of our development. Lately this has reverted to a 60% state 40% community share

8. **Do you have any additional information or concerns you would like to share about flooding or sea level rise? Has it personally impacted you or your community?**

we at Cape Shores have been impacted with beach erosion, especially after the last hurricane, Sandy. A major sand replenishment project is currently being done by the State to the public beach at a shared cost of 60% state / 40% community. I'm not sure this is substainable in the long run. While the loss of a public beach will probably result beach front properties might need another option (hard-scape) As a last resort

(optional) **Name:** [redacted]

Address: [redacted]

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C19

Sea Level Rise Public Engagement Session

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1. **How do you think government agencies could better work together to address sea level rise?** (See *Options for Preparing for Sea Level Rise* #1 - #9)
   Which options do you support or not support? Are there other ideas that you can share with us?
   All the ideas are good ones and I support them all. However, if I were to prioritize I feel #4 & #5 would be highest on my list

2. **How do you think planning and permitting for sea level rise adaptation could be improved?** (See *Options for Preparing for Sea Level Rise* #10 - #18)
   Which options do you support or not support? Are there other ideas that you can share with us?
   Again I agree with all (#10-#18) as important subject. However Again if I were to prioritize I think #12 & #15 should be highest. We need to restrict development in sensitive areas before they start, rather than try to handle the much more difficult problems that exist after the development is in place

3. **How do you think policies for development and natural resources could be improved to adapt to sea level rise?** (See *Options for Preparing for Sea Level Rise* #19 - #32)
   Which options do you support or not support? Are there other ideas that you can share with us?
   I support all options and think this section is the most important of the four. Our community (Cape Shores) is right along the beach and since hardening of the shore lines have always been discouraged it is important that an alternative be available just in case all else fails (#28)

4. **How do you think awareness of sea level rise impacts could be increased?** (See *Options for Preparing for Sea Level Rise* #33 - #36)
   Which options do you support or not support? Are there other ideas that you can share with us?
   I support all, but especially support #35. While I own a house that potentially could be at risk long-term, I think it is only honest and fair to warn new homebuyer of the property's potential future vulnerability. The potential future risk of sea level rise should be disclosed in the Delaware's Seller's disclosure of real property Condition report.

Additional questions on other side →

Sea Level Rise Public Engagement Session

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1. **How do you think government agencies could better work together to address sea level rise?** (See *Options for Preparing for Sea Level Rise* #1 - #9)
   Which options do you support or not support? Are there other ideas that you can share with us?

2. **How do you think planning and permitting for sea level rise adaptation could be improved?** (See *Options for Preparing for Sea Level Rise* #10 - #18)
   Which options do you support or not support? Are there other ideas that you can share with us?

3. **How do you think policies for development and natural resources could be improved to adapt to sea level rise?** (See *Options for Preparing for Sea Level Rise* #19 - #32)
   Which options do you support or not support? Are there other ideas that you can share with us?

4. **How do you think awareness of sea level rise impacts could be increased?** (See *Options for Preparing for Sea Level Rise* #33 - #36)
   Which options do you support or not support? Are there other ideas that you can share with us?

Additional questions on other side →

Sea Level Rise Public Engagement Session

COMMENT FORM

5. **How do you think information about sea level rise could be improved and made available?** (See *Options for Preparing for Sea Level Rise* #37 - #55)
   Which options do you support or not support? Are there other ideas that you can share with us?

Support D property & community impacts
relationship to flood zones & related BMPs

6. **How do you think assistance on adapting to sea level rise could be provided?** (See *Options for Preparing for Sea Level Rise* #56 - #61)
   Which options do you support or not support? Are there other ideas that you can share with us?

7. **Adapting to sea level rise can be costly for individuals, businesses and governments alike. Do you have ideas about how adaptation projects should be paid for?**

Decide early what to abandon
Payment depends on level of protection
home
neighborhood
town etc.

8. **Do you have any additional information or concerns you would like to share about flooding or sea level rise? Has it personally impacted you or your community?**

Key is explaining local impacts, options, costs etc. in terms of ~~state~~ with perspective of state plans

(optional) **Name:** _____

Address: _____

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---

1. **How do you think government agencies could better work together to address sea level rise?** (See *Options for Preparing for Sea Level Rise* #1 - #9)
   Which options do you support or not support? Are there other ideas that you can share with us?
   make use of Federal Highway administration climate change framework to assess & determine what is essential to maintain rail & crucial roads.

2. **How do you think planning and permitting for sea level rise adaptation could be improved?** (See *Options for Preparing for Sea Level Rise* #10 - #18)
   Which options do you support or not support? Are there other ideas that you can share with us?
   sea level rise predictions should be figured in to comprehensive development plans.

3. **How do you think policies for development and natural resources could be improved to adapt to sea level rise?** (See *Options for Preparing for Sea Level Rise* #19 - #32)
   Which options do you support or not support? Are there other ideas that you can share with us?
   Land use planning should discourage development in vulnerable areas; in fact I should say "prohibit" development in areas that will be flooding with Sea level rise.

4. **How do you think awareness of sea level rise impacts could be increased?** (See *Options for Preparing for Sea Level Rise* #33 - #36)
   Which options do you support or not support? Are there other ideas that you can share with us?
   Real estate disclosure of the vulnerability to the near term & long term effects of sea level rise of property transfers.

Additional questions on other side →

Sea Level Rise Public Engagement Session

COMMENT FORM

5. **How do you think information about sea level rise could be improved and made available?** (See *Options for Preparing for Sea Level Rise* #37 - #55)
   Which options do you support or not support? Are there other ideas that you can share with us?

6. **How do you think assistance on adapting to sea level rise could be provided?** (See *Options for Preparing for Sea Level Rise* #56 - #61)
   Which options do you support or not support? Are there other ideas that you can share with us?
   Providing as much technical information resources to businesses, industries, land management is a critical role for the state!

7. **Adapting to sea level rise can be costly for individuals, businesses and governments alike. Do you have ideas about how adaptation projects should be paid for?**
   #60 is particularly important and fraught with emotional problems, but cost benefit does need to be a factor as well as historical importance.

8. **Do you have any additional information or concerns you would like to share about flooding or sea level rise? Has it personally impacted you or your community?**
   I don't believe public money should be used for replenishment of private beaches. D.

(optional) **Name:** _____

Address: _____

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1. **How do you think government agencies could better work together to address sea level rise?** (See *Options for Preparing for Sea Level Rise* #1 - #9)
   Which options do you support or not support? Are there other ideas that you can share with us?
   SUPPORT 2, 4, 5

2. **How do you think planning and permitting for sea level rise adaptation could be improved?** (See *Options for Preparing for Sea Level Rise* #10 - #18)
   Which options do you support or not support? Are there other ideas that you can share with us?
   SUPPORT 10, 12, 14, 17

3. **How do you think policies for development and natural resources could be improved to adapt to sea level rise?** (See *Options for Preparing for Sea Level Rise* #19 - #32)
   Which options do you support or not support? Are there other ideas that you can share with us?
   SUPPORT 20, 21, 24, 27, 29

4. **How do you think awareness of sea level rise impacts could be increased?** (See *Options for Preparing for Sea Level Rise* #33 - #36)
   Which options do you support or not support? Are there other ideas that you can share with us?
   SUPPORT 33, 34, 35

Additional questions on other side →

Sea Level Rise Public Engagement Session

COMMENT FORM

5. **How do you think information about sea level rise could be improved and made available?** (See *Options for Preparing for Sea Level Rise* #37 - #55)
Which options do you support or not support? Are there other ideas that you can share with us?

SUPPORT 37, 43, 45, 47, 49, 51

6. **How do you think assistance on adapting to sea level rise could be provided?** (See *Options for Preparing for Sea Level Rise* #56 - #61)
Which options do you support or not support? Are there other ideas that you can share with us?

SUPPORT 58,

7. **Adapting to sea level rise can be costly for individuals, businesses and governments alike. Do you have ideas about how adaptation projects should be paid for?**

Doesn't matter – ultimately the money comes from residents

8. **Do you have any additional information or concerns you would like to share about flooding or sea level rise? Has it personally impacted you or your community?**

Understand this is all new ground but berms by dikes/levees need better engineering

(optional) **Name:** [redacted]

Address: [redacted]

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1. **How do you think government agencies could better work together to address sea level rise?** (See *Options for Preparing for Sea Level Rise* #1 - #9)
   Which options do you support or not support? Are there other ideas that you can share with us?
   #6 Partnerships with consultants should be included. Consultants offer a wealth of experience & expertise.
   Before effective outreach is maximize, DNREC, DELDOT, etc needs to maximize inter-department & inter-division cooperation & communication.

2. **How do you think planning and permitting for sea level rise adaptation could be improved?** (See *Options for Preparing for Sea Level Rise* #10 - #18)
   Which options do you support or not support? Are there other ideas that you can share with us?
   Need to proactively plan for new permitting issues with dredged material reuse projects and 401 WQC.

3. **How do you think policies for development and natural resources could be improved to adapt to sea level rise?** (See *Options for Preparing for Sea Level Rise* #19 - #32)
   Which options do you support or not support? Are there other ideas that you can share with us?
   Bring in new technologies to compliment "old" technologies. Straight nourishment no longer is enough & is uneconomical.

4. **How do you think awareness of sea level rise impacts could be increased?** (See *Options for Preparing for Sea Level Rise* #33 - #36)
   Which options do you support or not support? Are there other ideas that you can share with us?
   Implement programs & goals.

Additional questions on other side →

Sea Level Rise Public Engagement Session

COMMENT FORM

5. **How do you think information about sea level rise could be improved and made available?** (See *Options for Preparing for Sea Level Rise* #37 - #55)
   Which options do you support or not support? Are there other ideas that you can share with us?
   Most presentations suggest it (SLR) is coming or just arrived. It has been occurring for generations. Show people what damage it has caused over the past 100 years.

6. **How do you think assistance on adapting to sea level rise could be provided?** (See *Options for Preparing for Sea Level Rise* #56 - #61)
   Which options do you support or not support? Are there other ideas that you can share with us?
   Responsibility is shared by all. The state does not have to do everything. Private individuals & industry all take a risk being along the coast. They enjoy the good times, so they can deal with bad times.

7. **Adapting to sea level rise can be costly for individuals, businesses and governments alike. Do you have ideas about how adaptation projects should be paid for?**
   Funding starts w/ good design & planning. Pick a budget over next 30 years. That is ~~estimate~~ total cost & divide by 30 other priorities.

8. **Do you have any additional information or concerns you would like to share about flooding or sea level rise? Has it personally impacted you or your community?**

(optional) **Name:** _____

Address: _____

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1. **How do you think government agencies could better work together to address sea level rise?** (See *Options for Preparing for Sea Level Rise* #1 - #9)
   Which options do you support or not support? Are there other ideas that you can share with us?

Need to establish working groups ~~has~~ with representatives from all levels to work on the multiple lists of items.

2. **How do you think planning and permitting for sea level rise adaptation could be improved?** (See *Options for Preparing for Sea Level Rise* #10 - #18)
   Which options do you support or not support? Are there other ideas that you can share with us?

Include evaluation of SLR into local permitting process.

3. **How do you think policies for development and natural resources could be improved to adapt to sea level rise?** (See *Options for Preparing for Sea Level Rise* #19 - #32)
   Which options do you support or not support? Are there other ideas that you can share with us?

Agree of inclusion into Comp Development Plans.

4. **How do you think awareness of sea level rise impacts could be increased?** (See *Options for Preparing for Sea Level Rise* #33 - #36)
   Which options do you support or not support? Are there other ideas that you can share with us?

Rec Boards, Public Service Announcements, Targeting Realtors, Utility & Insurance Community.

Additional questions on other side →

Sea Level Rise Public Engagement Session

COMMENT FORM

5. **How do you think information about sea level rise could be improved and made available?** (See *Options for Preparing for Sea Level Rise* #37 - #55)
   Which options do you support or not support? Are there other ideas that you can share with us?

MAIN Link on Delaware & other govt webpages.
Feature articles in media – not highlighting this issue yet.

6. **How do you think assistance on adapting to sea level rise could be provided?** (See *Options for Preparing for Sea Level Rise* #56 - #61)
   Which options do you support or not support? Are there other ideas that you can share with us?

Federal grants, Conservation Measures, Local Code Improvements now for the future, Restrictions on Redevelopment.

7. **Adapting to sea level rise can be costly for individuals, businesses and governments alike. Do you have ideas about how adaptation projects should be paid for?**

See #6 – Long term Bond Bill & Federal grants along with Business/Community input.

8. **Do you have any additional information or concerns you would like to share about flooding or sea level rise? Has it personally impacted you or your community?**

Yes – having more frequent impacts @ high tides – Transportation Planning & Improvement of flooding roads needs to be more proactive & increased action.

(optional) **Name:** [redacted]

Address: [redacted]

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1. **How do you think government agencies could better work together to address sea level rise?** (See *Options for Preparing for Sea Level Rise* #1 - #9)
   Which options do you support or not support? Are there other ideas that you can share with us?
   I think all of these are important

2. **How do you think planning and permitting for sea level rise adaptation could be improved?** (See *Options for Preparing for Sea Level Rise* #10 - #18)
   Which options do you support or not support? Are there other ideas that you can share with us?
   approve of all options. One thing that has been left out is the importance of county ordinances which take care land use planning in unincorporated areas

3. **How do you think policies for development and natural resources could be improved to adapt to sea level rise?** (See *Options for Preparing for Sea Level Rise* #19 - #32)
   Which options do you support or not support? Are there other ideas that you can share with us?
   Again, you omitted the importance of county governments. #24 is very important. A great deal of money would be wasted shoring up areas that the state should be relocating from. all are important

4. **How do you think awareness of sea level rise impacts could be increased?** (See *Options for Preparing for Sea Level Rise* #33 - #36)
   Which options do you support or not support? Are there other ideas that you can share with us?
   #35 very important — approve of all these options

Additional questions on other side →

Sea Level Rise Public Engagement Session

COMMENT FORM

5. **How do you think information about sea level rise could be improved and made available?** (See *Options for Preparing for Sea Level Rise* #37 - #55)
   Which options do you support or not support? Are there other ideas that you can share with us?

Use the newspapers more
support all options

6. **How do you think assistance on adapting to sea level rise could be provided?** (See *Options for Preparing for Sea Level Rise* #56 - #61)
   Which options do you support or not support? Are there other ideas that you can share with us?

all of these are very important

7. **Adapting to sea level rise can be costly for individuals, businesses and governments alike. Do you have ideas about how adaptation projects should be paid for?**

Counties should be more involved in projects. They are the ones that collect the property Taxes. All counties should be reassessed.

8. **Do you have any additional information or concerns you would like to share about flooding or sea level rise? Has it personally impacted you or your community?**

no

(optional) **Name:** [redacted]

Address: [redacted]

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Comments Due By March 14

Sea Level Rise Public Engagement Session

COMMENT FORM

Your answers to these questions will help the Advisory Committee finalize its list of options for preparing Delaware for sea level rise.

Please answer as many of the questions as your time allows, and feel free to provide additional comments on another sheet or to the contacts listed on the back of this form.

For Questions 1-6, please refer to the document provided at the public engagements sessions entitled, "***Options for Preparing Delaware for Sea Level Rise: A Draft for Discussion at Sea Level Rise Public Engagement Sessions, February 2013***" for the list of proposed adaptation options from the Sea Level Rise Advisory Committee.

---

1. **How do you think government agencies could better work together to address sea level rise?** (See *Options for Preparing for Sea Level Rise* #1 - #9)
   Which options do you support or not support? Are there other ideas that you can share with us?

2. **How do you think planning and permitting for sea level rise adaptation could be improved?** (See *Options for Preparing for Sea Level Rise* #10 - #18)
   Which options do you support or not support? Are there other ideas that you can share with us?
   Do not weaken Coastal Zone Act (#16).
   Provide technical help

3. **How do you think policies for development and natural resources could be improved to adapt to sea level rise?** (See *Options for Preparing for Sea Level Rise* #19 - #32)
   Which options do you support or not support? Are there other ideas that you can share with us?
   Regulate freshwater wetlands. #19 & #20 are vital. The state must avoid dictating local land use but they can tell local govt. to think about it. Force communities to consider evacuation plans for disabled & elderly — without telling them exactly what to do. TDR's (#26) would be incredibly helpful

4. **How do you think awareness of sea level rise impacts could be increased?** (See *Options for Preparing for Sea Level Rise* #33 - #36)
   Which options do you support or not support? Are there other ideas that you can share with us?
   Provide SLR planning grants to local governments — especially target Wilmington.
   #35 Insist on real estate disclosure for homes vulnerable to SLR

Additional questions on other side →

Sea Level Rise Public Engagement Session

COMMENT FORM

5. **How do you think information about sea level rise could be improved and made available?** (See *Options for Preparing for Sea Level Rise* #37 - #55)
Which options do you support or not support? Are there other ideas that you can share with us?

#47 Consider storm surge! Its really important.
#49 Hollands migration planning is crucial.

6. **How do you think assistance on adapting to sea level rise could be provided?** (See *Options for Preparing for Sea Level Rise* #56 - #61)
Which options do you support or not support? Are there other ideas that you can share with us?

#56. Coordinating & encouraging the use of technical assistance for local govts. is important (as mentioned under #4 on 1st page of this form).
#58. We must protect the Port of Wilmington.

7. **Adapting to sea level rise can be costly for individuals, businesses and governments alike. Do you have ideas about how adaptation projects should be paid for?**

Use increased revenues from RGGI auctions. Make Prime Hook residents pay for their own roads. Include short term rentals in hotel tax. Permit expenditure of tax revenues in NCC.

8. **Do you have any additional information or concerns you would like to share about flooding or sea level rise? Has it personally impacted you or your community?**

Widely advertise FEMA rankings & the reduced insurance rates that result from higher rankings.
Stop ~~[illegible]~~ the Insurance Commissioner from allowing end runs around flood insurance.

(optional) **Name:** [redacted]

Address:

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Comments Due By March 14

Sea Level Rise Public Engagement Session

COMMENT FORM

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---

1. **How do you think government agencies could better work together to address sea level rise?** (See *Options for Preparing for Sea Level Rise* #1 - #9)
   Which options do you support or not support? Are there other ideas that you can share with us?

2. **How do you think planning and permitting for sea level rise adaptation could be improved?** (See *Options for Preparing for Sea Level Rise* #10 - #18)
   Which options do you support or not support? Are there other ideas that you can share with us?
   It would be good to have a cost estimate for the most extreme solution: abandon, ~~buyout~~ buyout, move. With some rough dollar number for the extreme, we can evaluate other plans.

3. **How do you think policies for development and natural resources could be improved to adapt to sea level rise?** (See *Options for Preparing for Sea Level Rise* #19 - #32)
   Which options do you support or not support? Are there other ideas that you can share with us?
   Promote #8 on the display.

4. **How do you think awareness of sea level rise impacts could be increased?** (See *Options for Preparing for Sea Level Rise* #33 - #36)
   Which options do you support or not support? Are there other ideas that you can share with us?

Additional questions on other side →

Sea Level Rise Public Engagement Session

COMMENT FORM

5. **How do you think information about sea level rise could be improved and made available?** (See *Options for Preparing for Sea Level Rise* #37 - #55)
   Which options do you support or not support? Are there other ideas that you can share with us?

6. **How do you think assistance on adapting to sea level rise could be provided?** (See *Options for Preparing for Sea Level Rise* #56 - #61)
   Which options do you support or not support? Are there other ideas that you can share with us?
   Consider an outside consulting firm.

7. **Adapting to sea level rise can be costly for individuals, businesses and governments alike. Do you have ideas about how adaptation projects should be paid for?**
   (1) Don't waste money on stopgaps that will not last. Then divert these funds to more permanent solutions. I know that this will not pay for everything, but it's a start, and it shows the direction of a comprehensive plan. (Tough love!)

8. **Do you have any additional information or concerns you would like to share about flooding or sea level rise? Has it personally impacted you or your community?**

(optional) **Name:** [redacted]

Address: [redacted]

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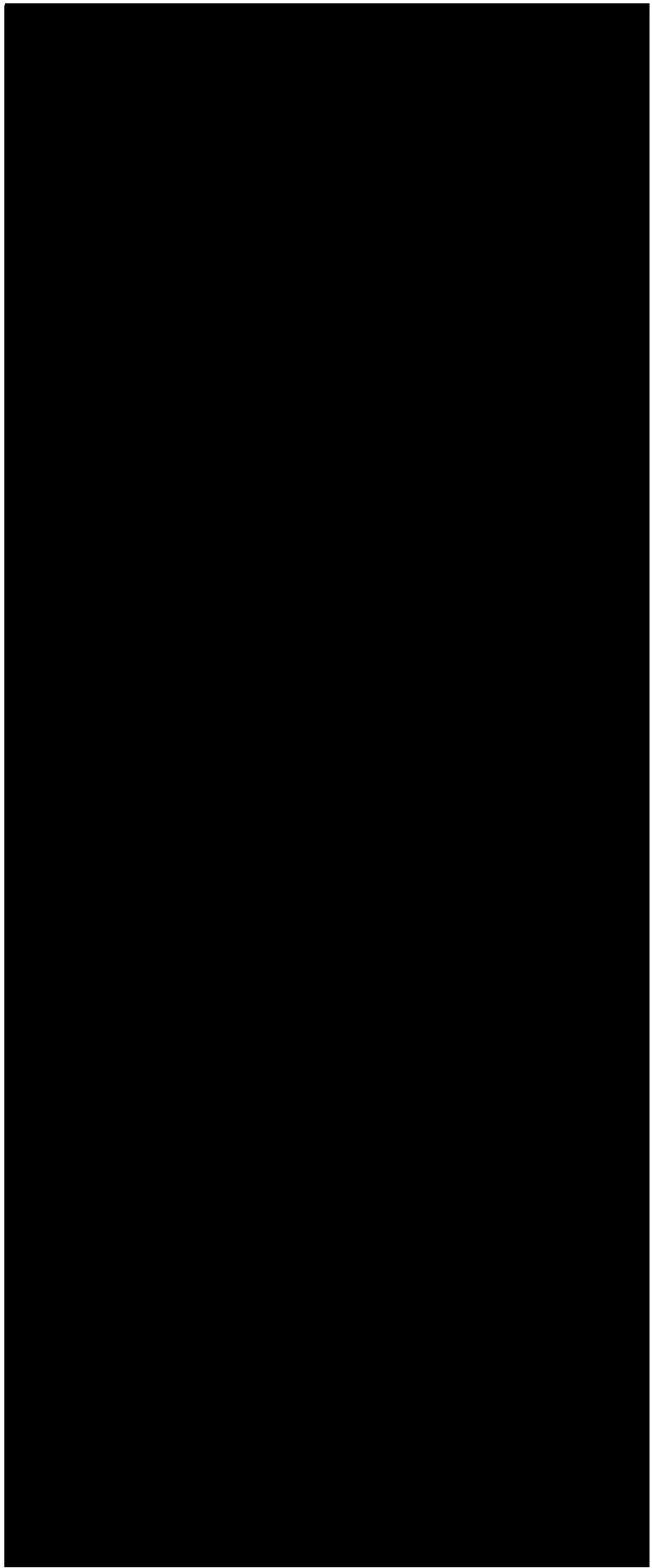

Sea Level Rise Public Engagement Session

COMMENT FORM

5. **How do you think information about sea level rise could be improved and made available?** (See *Options for Preparing for Sea Level Rise* #37 - #55)
Which options do you support or not support? Are there other ideas that you can share with us?

#37(b) 38(a) low lying areas like South Bridge #38(a) how to evac SB where all roads might flood #40(b) certainly should be a priority #43(a), #45(a) #47(b) #49(a) #50 they must be based on future projections not just caused reports by all mean conduct risk assessment of dikes & levees. Part of the reason Katrina such havoc in New Orleans is because Congress ignored the Army Corps of Engineers on dikes & levees that might fail.

6. **How do you think assistance on adapting to sea level rise could be provided?** (See *Options for Preparing for Sea Level Rise* #56 - #61)
Which options do you support or not support? Are there other ideas that you can share with us?

#56(a) #57(a) #59(a) 60(b) #61(a)

7. **Adapting to sea level rise can be costly for individuals, businesses and governments alike. Do you have ideas about how adaptation projects should be paid for?**

The cost could be passed on to land owners in the form of a tax that would increase their annual payment per acre, a few cents on home owners a few dollars on commercial or industrial properties. The owners annual income could be considered too to determine the individual's pay scale. Rich land owners paying more than poor house holders. The tax could gradually be raised over a period of years so as not to impact property owners so much all at once.

8. **Do you have any additional information or concerns you would like to share about flooding or sea level rise? Has it personally impacted you or your community?**

I've been told raising S. Market Street caused some of the flooding in cellars throughout S. Bridge, the solution then would be to raise Newcastle Ave, S. Claymont St. etc. I am informed basements also flood because the sewers haven't been cleaned out around here for decades. The solution is simple Clean & modernize the sewer systems. Get South Bridge declared a Historic Section to make municipal government notice us and qualify for grants.

(optional) **Name:** [redacted]

Address: [redacted]

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Sea Level Rise Public Engagement Session

COMMENT FORM

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Please answer as many of the questions as your time allows, and feel free to provide additional comments on another sheet or to the contacts listed on the back of this form.

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---

1. **How do you think government agencies could better work together to address sea level rise?** (See *Options for Preparing for Sea Level Rise* #1 - #9)
   Which options do you support or not support? Are there other ideas that you can share with us?

   #2 (a) #4 (b) #6

   Start local cooperatives to aid in evacuating residents from high-risk areas when threats posed. &

2. **How do you think planning and permitting for sea level rise adaptation could be improved?** (See *Options for Preparing for Sea Level Rise* #10 - #18)
   Which options do you support or not support? Are there other ideas that you can share with us?

   #11 (a) #13 (a) #15 #16 (b) #18 (a)

   If maps haven't been updated since 1988 they certainly should be.

3. **How do you think policies for development and natural resources could be improved to adapt to sea level rise?** (See *Options for Preparing for Sea Level Rise* #19 - #32)
   Which options do you support or not support? Are there other ideas that you can share with us?

   #19 (a) #21 (b) #22 (a) #24 #25 (a) #27 (a) #29 (a) #31

   Dikes should be put under one entity that's part of a cooperative governed by Del. Mary. N.J. & Penn.

4. **How do you think awareness of sea level rise impacts could be increased?** (See *Options for Preparing for Sea Level Rise* #33 - #36)
   Which options do you support or not support? Are there other ideas that you can share with us?

   #33 #36 (a)

   How do we interest the masses enough to gather input? I was the only S. Bridge homeowner to take advantage of transport to the meeting. There/s it's a poor neighborhood and most residents don't own cars. Disgraceful.

Additional questions on other side →

Sea Level Rise Public Engagement Session

COMMENT FORM [redacted]

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---

1. **How do you think government agencies could better work together to address sea level rise?** (See *Options for Preparing for Sea Level Rise* #1 - #9)
   While I would support the options (1-9), storm surge should be the prime consideration ahead of sea level rise. The actual sea level rise of 3.2 mm/yr or 1.05 ft/100 years is very slow, equal to about 1/8 inch/year or only about 1.25 inches per decade. This slow rate can be and has been adapted to fairly easily. The real danger and damage comes from storms with surges up to 5 feet which may happen anytime and often, not 100 years from now.

2. **How do you think planning and permitting for sea level rise adaptation could be improved?** (See *Options for Preparing for Sea Level Rise* #10 - #18)
   Which options do you support or not support? Are there other ideas that you can share with us?
   Sea level rise should be considered but the emphasis should be on storm surges of 5 ft or more. Expensive and critical new facilities should be built well out of reach of storm surges and sea level rise with a margin of safety built in. The statement in (13) is important: "The costs of any additional requirements should be carefully considered and weighed against the lifespan of the system."

3. **How do you think policies for development and natural resources could be improved to adapt to sea level rise?** (See *Options for Preparing for Sea Level Rise* #19 - #32)
   We should not be carried away with predictions for large changes far into the future which are very uncertain and cannot be relied on. At the actual rate, it will take about 150, 300, and 450 years respectively to reach the assumed sea level rises. Wetlands strategy is a different matter –they are wet now. Still, it is storms that cause the most damage. The ongoing evaluations must continue and decide on a strategy.

4. **How do you think awareness of sea level rise impacts could be increased?** (See *Options for Preparing for Sea Level Rise* #33 - #36)
   I thought the Public Engagement Session which I attended on Feb. 19, 2013, was good. Important information was presented on the actual sea level rise and the history of storm surges which could happen anytime. It was rightly pointed out that sea rise is not new but has been going on for a long time, and that the planning scenarios assumed much higher rates than have actually occurred. **NO to Option 35.** Real estate Sellers Disclosures must be based on 100-year floodplains, not on DNREC sea level planning scenarios.

Additional questions on other side →

Sea Level Rise Public Engagement Session

COMMENT FORM

5. **How do you think information about sea level rise could be improved and made available?** (See *Options for Preparing for Sea Level Rise* #37 - #55)

Developing and implementing the best methods for hardening and repairing the coastline and funding the coastline is probably the most important task. Filling in the data gaps like (54) is needed.(37, 38) These should be done, but isn't the real risk to dikes, levees, and wastewater infrastructures from storms? We should keep in mind that sea level rise now is only about 1.25 inches per 10 years.

6. **How do you think assistance on adapting to sea level rise could be provided?** (See *Options for Preparing for Sea Level Rise* #56 - #61)
   Which options do you support or not support? Are there other ideas that you can share with us?

Technical assistance, cost benefit analysis, and data base of costs could be very useful. Help getting funding may be even more important.

7. **Adapting to sea level rise can be costly for individuals, businesses and governments alike. Do you have ideas about how adaptation projects should be paid for?**

8. **Do you have any additional information or concerns you would like to share about flooding or sea level rise? Has it personally impacted you or your community?**

Tide gauges show mean sea level rising at nearly constant rates for many years and not accelerating. NOAA analysis of 50-year mean values for Lewes DE show that the trend from the most recent data is the same as from the earliest data – in other words, the rate has not changed. Please see attached http://tidesandcurrents.noaa.gov/sltrends/50yr.shtml?stnid=8557380

Slightly lower values in middle years at Lewes are indicative of 50-60 year cycles seen in most long-term sea level trends. These cycles are seen more clearly in the trends for The Battery, New York, on Manhattan with data dating from 1856, and for Baltimore MD with data back to 1902. See attached.

(optional) **Name:** _ [redacted]

Address: _

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Comments Due By March 14

8. (continued)

Sea Level Rise Public Engagement Session Comment Form Attachment Greer

Slightly lower values in middle years at Lewes are indicative of 50-60 year cycles seen in most long-term sea level trends. These cycles are seen more clearly in the trends for The Battery, New York, on Manhattan with data dating from 1856, and for Baltimore MD with data back to 1902. See attached.

Studies show little or no Sea-Level rise acceleration in the 20th Century, but instead often show small decelerations. For example, Houston and Dean (2011) conclude that

"Our analyses do not indicate acceleration in sea level in U.S. tide gauge records during the 20th century. Instead, for each time period we consider, the records show small decelerations that are consistent with a number of earlier studies of worldwide-gauge records."

J. R. Houston and R. G. Dean (*2011*) Sea-Level Acceleration Based on U.S. Tide Gauges and Extensions of Previous Global-Gauge Analyses. Journal of Coastal Research: Volume 27, Issue 3: pp. 409 – 417. http://www.jcronline.org/doi/full/10.2112/JCOASTRES-D-10-00157.1

Earlier studies they refer to include:

Woodworth (1990) analyzed long records from European tide gauges and found an overall slight deceleration from 1870 to 1990, although he found accelerations in individual gauge records. Woodworth, P. L. 1990. A search for accelerations in records of European mean sea level. International Journal of Climatology 10:129–143.

Douglas (1992) analyzed 23 worldwide tide-gauge records of 75 years or greater and determined an average sea-level deceleration of -0.011 ± 0.012 mm/y^2 (standard deviation [SD]) for the 80-year period from 1905 to 1985. Douglas further analyzed 37 global records that had an average length of 92 years and determined that from 1850–1991 the average acceleration was 0.001 ± 0.008 mm/y^2 (SD). He... concluded there was no evidence of acceleration in the past 100 or more years that was statistically significant or consistent with values predicted by global warming models. Douglas, B. C. 1992. Global sea level acceleration. Journal of Geophysical Research 97 (C8):12699–12706.

Church *et al.* (2004) used nine years of Topography Experiment (TOPEX)/Poseidon satellite-altimeter data to estimate global empirical orthogonal functions (EOFs) that were then combined with historical tide-gauge data to estimate global sea-level rise from 1950–2000. The data led them to conclude, "... there is no detectable secular increase in the rate of sea-level rise over the period 1950–2000. Church, J. A. , N. J. White , R. Coleman , K. Lambeck , and J. X. Mitrovica . 2004. Estimates of the regional distribution of sea-level rise over the 1950 to 2000 period. Journal of Climate 17 (13):2609–2625.

[redacted]

Sea Level Rise Public Engagement Session Comment Form Attachment

[redacted]

Sea Level Trends

Alabama
Alaska
California
Connecticut
Delaware
Florida
Georgia
Hawaii
Louisiana
Maine
Maryland
Massachusetts
New Jersey
New York
North Carolina
Oregon
Pennsylvania
Rhode Island
South Carolina
Texas
Virginia
Washington
Washington DC
Island Stations

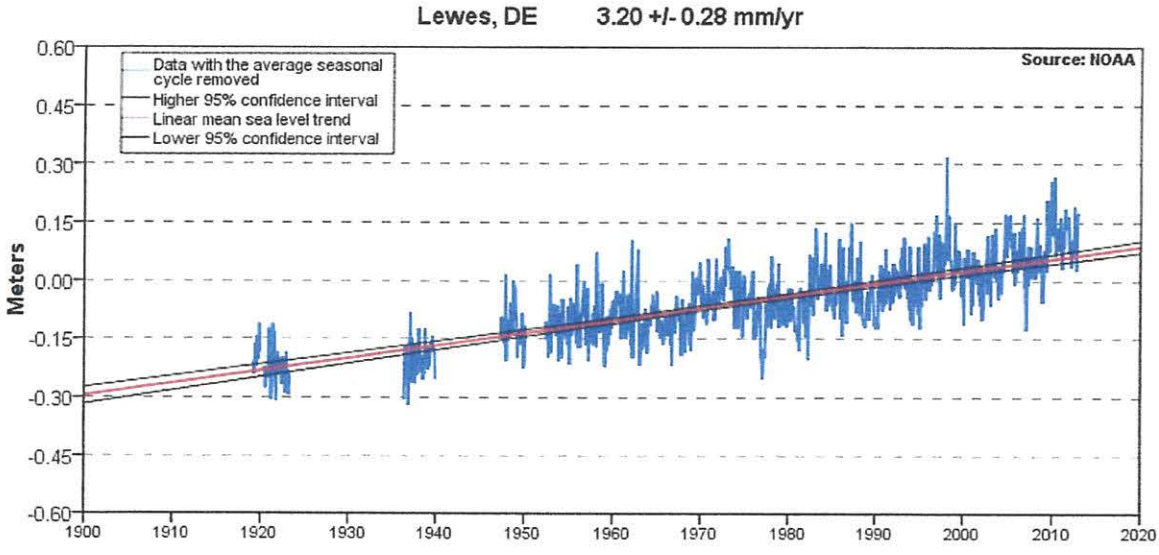
Sea Level Trend Table in mm/yr

Sea Level Trend Table in feet/century

Global Stations

Main Page

Mean Sea Level Trend
8557380 Lewes, Delaware

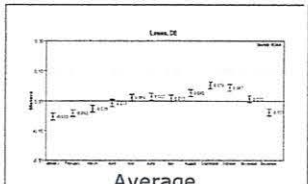


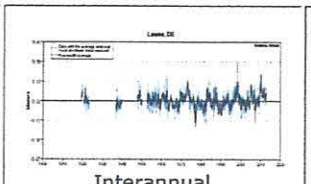
The mean sea level trend is 3.20 millimeters/year with a 95% confidence interval of +/- 0.28 mm/yr based on monthly mean sea level data from 1919 to 2006 which is equivalent to a change of 1.05 feet in 100 years.

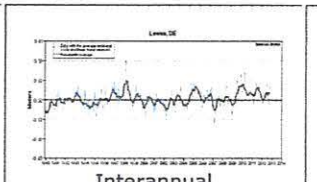
NEW! **Updated Mean Sea Level Trends**

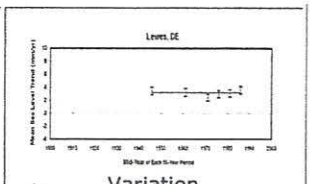
The plot shows the monthly mean sea level without the regular seasonal fluctuations due to coastal ocean temperatures, salinities, winds, atmospheric pressures, and ocean currents. The long-term linear trend is also shown, including its 95% confidence interval. The plotted values are relative to the most recent Mean Sea Level datum established by CO-OPS. The calculated trends for all stations are available as a table in millimeters/year or a table in feet/century (0.3 meters = 1 foot).

If present, solid vertical lines indicate times of any major earthquakes in the vicinity of the station and dashed vertical lines bracket any periods of questionable data.


Average seasonal cycle


Interannual variation for all data


Interannual variation since 1990


Variation of 50-year mean sea level trends

See enlarged next page.

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Sea Level Rise Public Engagement Session Comment Form Attachment

[redacted]

Sea Level Trends

Alabama
Alaska
California
Connecticut
Delaware
Florida
Georgia
Hawaii
Louisiana
Maine
Maryland
Massachusetts
New Jersey
New York
North Carolina
Oregon
Pennsylvania
Rhode Island
South Carolina
Texas
Virginia
Washington
Washington DC
Island Stations

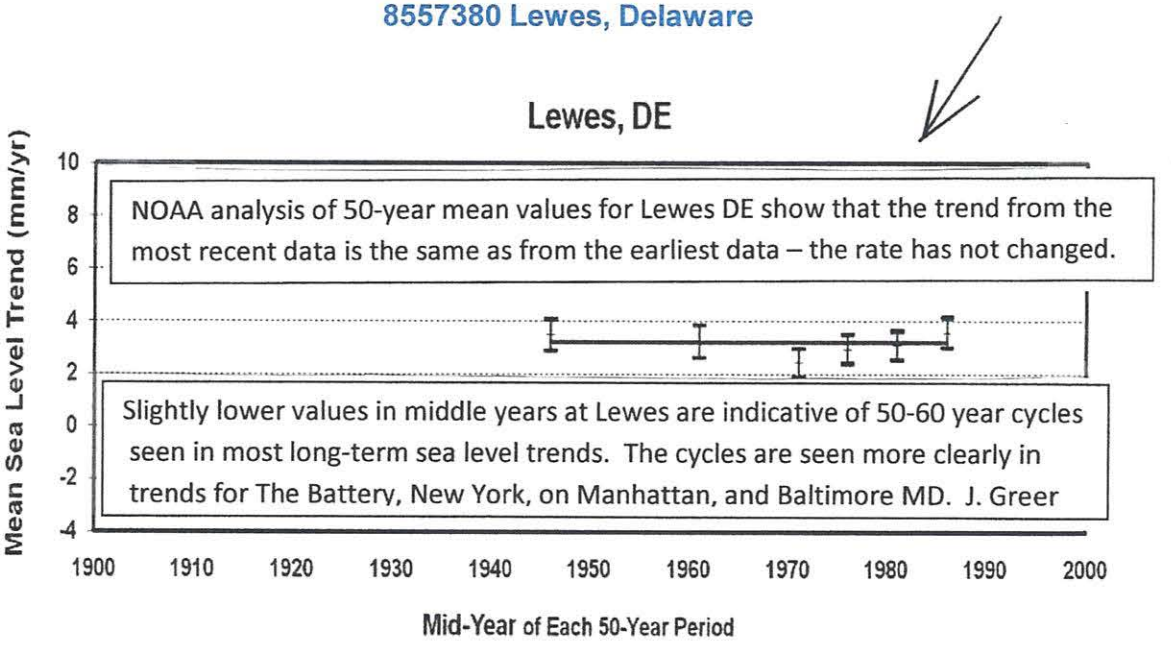
Sea Level Trend Table in mm/yr

Sea Level Trend Table in feet/century

Global Stations

Main Page

Variation of 50-Year Mean Sea Level Trends
8557380 Lewes, Delaware



Linear mean sea level trends were calculated in overlapping 50-year increments for stations with sufficient historical data. The variability of each 50-year trend, with 95% confidence interval, is plotted against the mid-year of each 50-year period. The solid horizontal line represents the linear mean sea level trend using the entire period of record.

Variation of 50-Year Mean Sea Level Trends

1612340 Honolulu, Hawaii	1617760 Hilo, Hawaii	8418150 Portland, Maine	8443970 Boston, Massachusetts	8518750 The Battery, New York
8534720 Atlantic City, New Jersey	8545240 Philadelphia, Pennsylvania	8557380 Lewes, Delaware	8574680 Baltimore, Maryland	8594900 Washington, DC
8638610 Sewells Point, Virginia	8665530 Charleston, South Carolina	8720030 Fernandina Beach, Florida	8724580 Key West, Florida	8727520 Cedar Key, Florida
8729840 Pensacola, Florida	8771450 Galveston Pier 21, Texas	9410170 San Diego, California	9410230 La Jolla, California	9410660 Los Angeles, California
9414290 San Francisco, California	9439040 Astoria, Oregon	9447130 Seattle, Washington	9450460 Ketchikan, Alaska	9451600 Sitka, Alaska

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Sea Level Rise Public Engagement Session Comment Form Attachment

[redacted]

Sea Level Trends

Alabama
Alaska
California
Connecticut
Delaware
Florida
Georgia
Hawaii
Louisiana
Maine
Maryland
Massachusetts
New Jersey
New York
North Carolina
Oregon
Pennsylvania
Rhode Island
South Carolina
Texas
Virginia
Washington
Washington DC
Island Stations

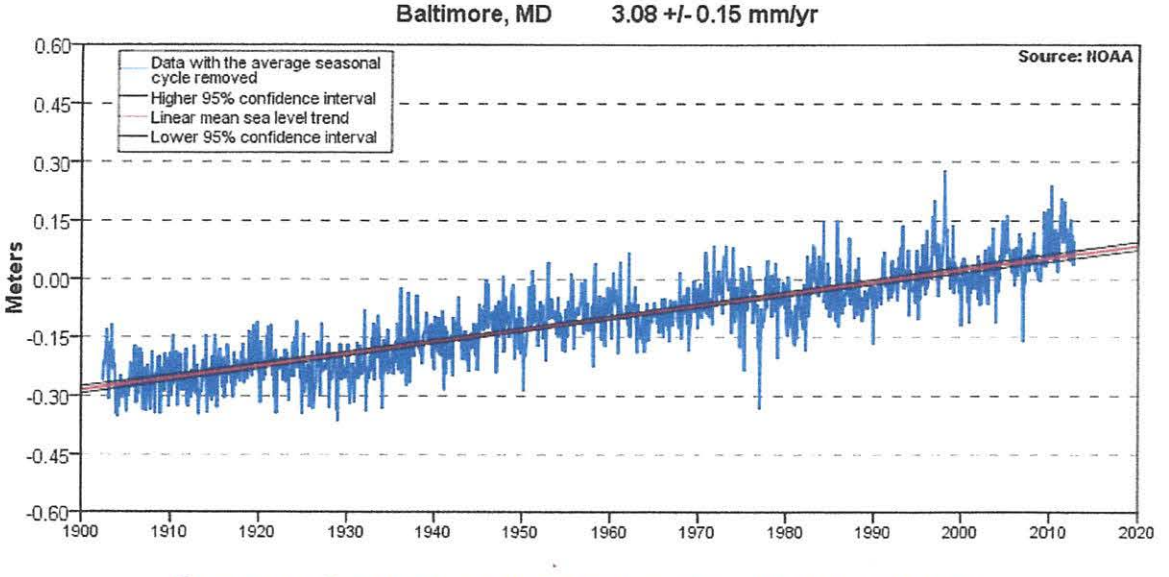
Sea Level Trend Table in mm/yr

Sea Level Trend Table in feet/century

Global Stations

Main Page

Mean Sea Level Trend
8574680 Baltimore, Maryland



The mean sea level trend is 3.08 millimeters/year with a 95% confidence interval of +/- 0.15 mm/yr based on monthly mean sea level data from 1902 to 2006 which is equivalent to a change of 1.01 feet in 100 years.

NEW! **Updated Mean Sea Level Trends**

The plot shows the monthly mean sea level without the regular seasonal fluctuations due to coastal ocean temperatures, salinities, winds, atmospheric pressures, and ocean currents. The long-term linear trend is also shown, including its 95% confidence interval. The plotted values are relative to the most recent Mean Sea Level datum established by CO-OPS. The calculated trends for all stations are available as a table in millimeters/year or a table in feet/century (0.3 meters = 1 foot).

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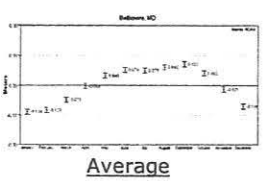
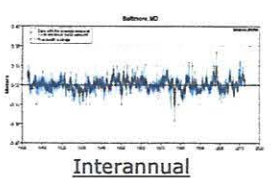
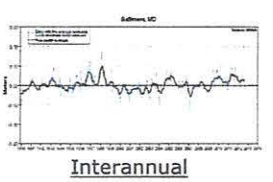
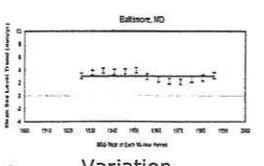

Average seasonal cycle


Interannual variation for all data


Interannual variation since 1990


Variation of 50-year mean sea level trends

See enlarged next page.

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Sea Level Rise Public Engagement Session Comment Form Attachment [redacted]

Sea Level Trends

Alabama
Alaska
California
Connecticut
Delaware
Florida
Georgia
Hawaii
Louisiana
Maine
Maryland
Massachusetts
New Jersey
New York
North Carolina
Oregon
Pennsylvania
Rhode Island
South Carolina
Texas
Virginia
Washington
Washington DC
Island Stations

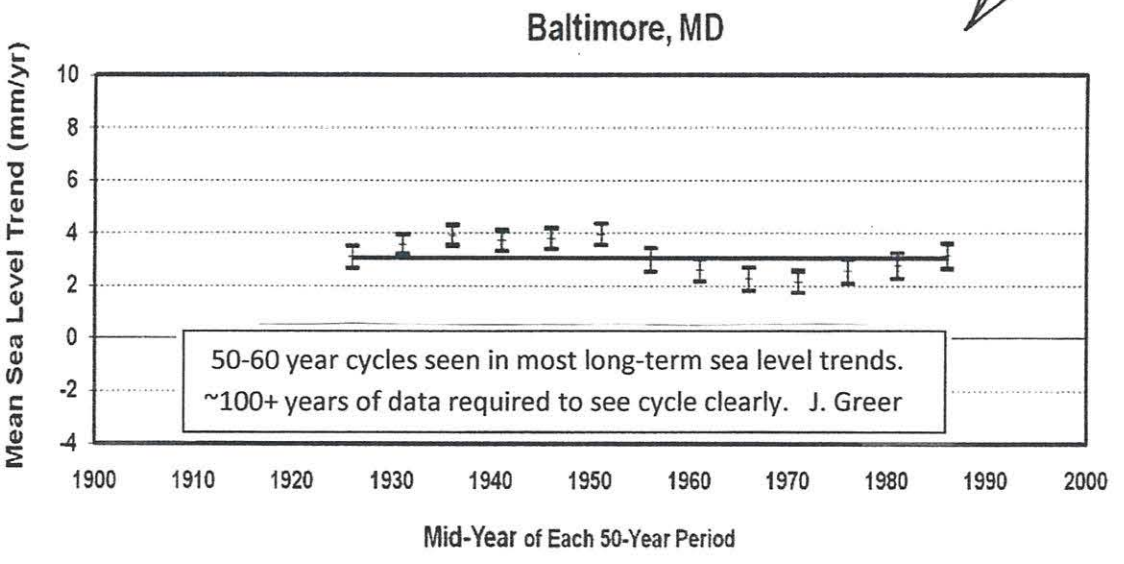
Sea Level Trend Table in mm/yr

Sea Level Trend Table in feet/century

Global Stations

Main Page

Variation of 50-Year Mean Sea Level Trends
8574680 Baltimore, Maryland



Linear mean sea level trends were calculated in overlapping 50-year increments for stations with sufficient historical data. The variability of each 50-year trend, with 95% confidence interval, is plotted against the mid-year of each 50-year period. The solid horizontal line represents the linear mean sea level trend using the entire period of record.

Variation of 50-Year Mean Sea Level Trends

1612340 Honolulu, Hawaii	1617760 Hilo, Hawaii	8418150 Portland, Maine	8443970 Boston, Massachusetts	8518750 The Battery, New York
8534720 Atlantic City, New Jersey	8545240 Philadelphia, Pennsylvania	8557380 Lewes, Delaware	8574680 Baltimore, Maryland	8594900 Washington, DC
8638610 Sewells Point, Virginia	8665530 Charleston, South Carolina	8720030 Fernandina Beach, Florida	8724580 Key West, Florida	8727520 Cedar Key, Florida
8729840 Pensacola, Florida	8771450 Galveston Pier 21, Texas	9410170 San Diego, California	9410230 La Jolla, California	9410660 Los Angeles, California
9414290 San Francisco, California	9439040 Astoria, Oregon	9447130 Seattle, Washington	9450460 Ketchikan, Alaska	9451600 Sitka, Alaska

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Sea Level Rise Public Engagement Session Comment Form Attachment

[redacted]

Sea Level Trends

Alabama
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California
Connecticut
Delaware
Florida
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Hawaii
Louisiana
Maine
Maryland
Massachusetts
New Jersey
New York
North Carolina
Oregon
Pennsylvania
Rhode Island
South Carolina
Texas
Virginia
Washington
Washington DC
Island Stations

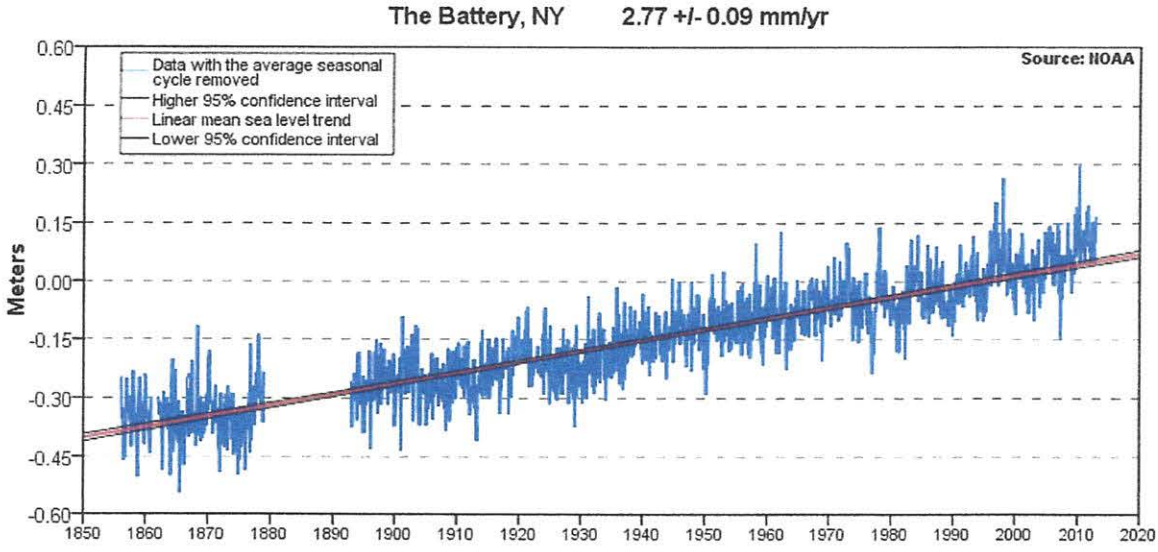
Sea Level Trend Table in mm/yr

Sea Level Trend Table in feet/century

Global Stations

Main Page

Mean Sea Level Trend
8518750 The Battery, New York



The mean sea level trend is 2.77 millimeters/year with a 95% confidence interval of +/- 0.09 mm/yr based on monthly mean sea level data from 1856 to 2006 which is equivalent to a change of 0.91 feet in 100 years.

NEW! **Updated Mean Sea Level Trends**

The plot shows the monthly mean sea level without the regular seasonal fluctuations due to coastal ocean temperatures, salinities, winds, atmospheric pressures, and ocean currents. The long-term linear trend is also shown, including its 95% confidence interval. The plotted values are relative to the most recent Mean Sea Level datum established by CO-OPS. The calculated trends for all stations are available as a table in millimeters/year or a table in feet/century (0.3 meters = 1 foot).

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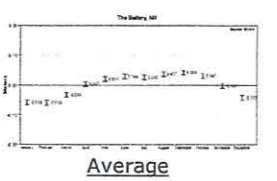
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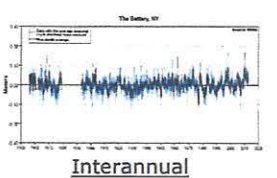
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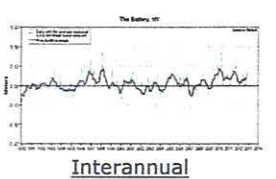
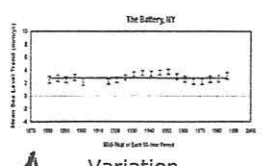

Interannual variation since 1990


Variation of 50-year mean sea level trends

See enlarged next page.

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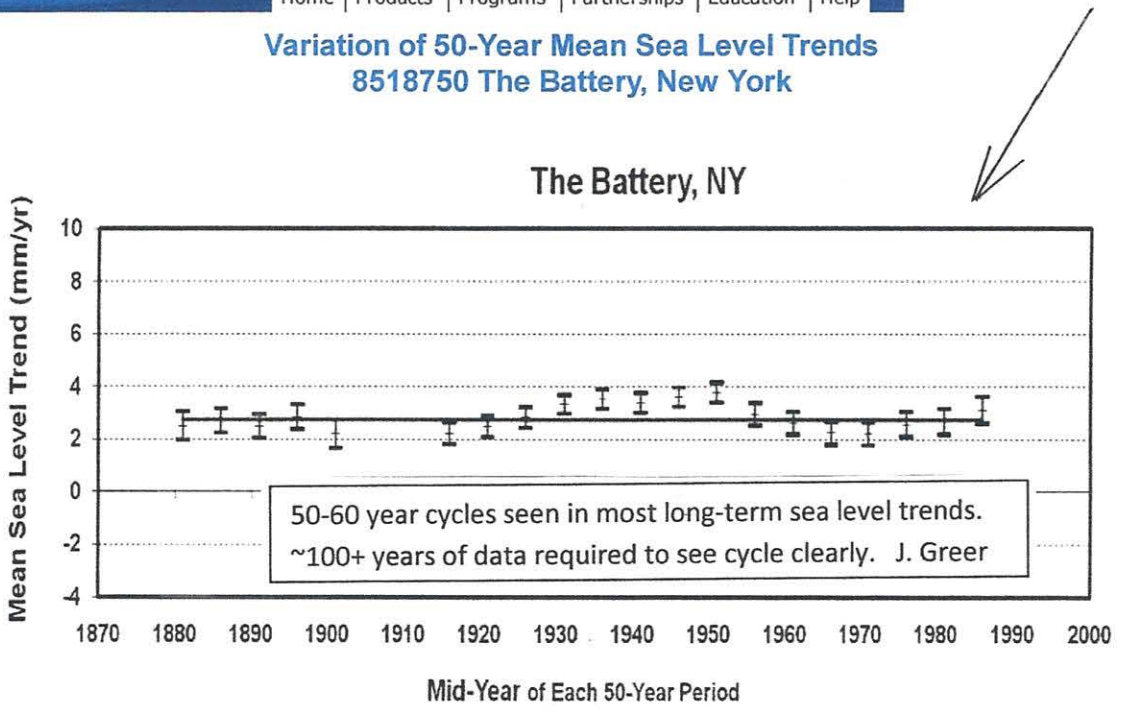
8518750 The Battery, New York



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Sea Level Rise Public Engagement Session

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1. **How do you think government agencies could better work together to address sea level rise?** (See *Options for Preparing for Sea Level Rise* #1 - #9)
   Which options do you support or not support? Are there other ideas that you can share with us?

   Options #1 thru #9 should all be supported

2. **How do you think planning and permitting for sea level rise adaptation could be improved?** (See *Options for Preparing for Sea Level Rise* #10 - #18)
   Which options do you support or not support? Are there other ideas that you can share with us?

   All these options should be supported

3. **How do you think policies for development and natural resources could be improved to adapt to sea level rise?** (See *Options for Preparing for Sea Level Rise* #19 - #32)
   Which options do you support or not support? Are there other ideas that you can share with us?

   Support all option's - #21 should have been considered prior to construction of the new Indian River Bridge
   #24 would be an expensive option for the State in beach #28 - needs to be encouraged All are important areas

4. **How do you think awareness of sea level rise impacts could be increased?** (See *Options for Preparing for Sea Level Rise* #33 - #36)
   Which options do you support or not support? Are there other ideas that you can share with us?

   Do not agree w/ #35

Additional questions on other side →

Sea Level Rise Public Engagement Session

COMMENT FORM

5. **How do you think information about sea level rise could be improved and made available?** (See *Options for Preparing for Sea Level Rise* #37 - #55)
   Which options do you support or not support? Are there other ideas that you can share with us?
   #47 and #50 very important to the beach areas that are already very developed

6. **How do you think assistance on adapting to sea level rise could be provided?** (See *Options for Preparing for Sea Level Rise* #56 - #61)
   Which options do you support or not support? Are there other ideas that you can share with us?
   support all options

7. **Adapting to sea level rise can be costly for individuals, businesses and governments alike. Do you have ideas about how adaptation projects should be paid for?**
   a national flood tax

8. **Do you have any additional information or concerns you would like to share about flooding or sea level rise? Has it personally impacted you or your community?**
   We live on the ocean side of Dewey Beach so all of this will impact our community

(optional) **Name:** [redacted]

Address: [redacted]

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https://www.surveymonkey.com/s/sealeveladaptationcomments
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1. **How do you think government agencies could better work together to address sea level rise?** (See *Options for Preparing for Sea Level Rise* #1 - #9)
   Which options do you support or not support? Are there other ideas that you can share with us?
   Sussex Co. Council is very backward except for 1 person. The Bd. of ~~Planning~~ Adjust. is terrible also. We need the state to force (Mete) them to do wise things. Only 1 council person goes to workshops!

2. **How do you think planning and permitting for sea level rise adaptation could be improved?** (See *Options for Preparing for Sea Level Rise* #10 - #18)
   Which options do you support or not support? Are there other ideas that you can share with us?
   I'm concerned re flood insurance + household insurance re how much will increase. I know of someone in Fla. who pays $30,000 a yr. just for insurance.

3. **How do you think policies for development and natural resources could be improved to adapt to sea level rise?** (See *Options for Preparing for Sea Level Rise* #19 - #32)
   Which options do you support or not support? Are there other ideas that you can share with us?
   For the time being, need businesses to offer reasonably priced raising house off of foundation to several feet higher. In lower Sussex I used to see lots of moving of houses. My mobile home on foundation is about 4 feet hi.

4. **How do you think awareness of sea level rise impacts could be increased?** (See *Options for Preparing for Sea Level Rise* #33 - #36) more NPR
   Which options do you support or not support? Are there other ideas that you can share with us?
   Existing housing not on pilings - what are the problems to put them up? To delay loss of property before the planned retreat. Some entrepreneur could start a whole new business.

Additional questions on other side →

Sea Level Rise Public Engagement Session

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5. **How do you think information about sea level rise could be improved and made available?** (See *Options for Preparing for Sea Level Rise* #37 - #55)
   Which options do you support or not support? Are there other ideas that you can share with us?

6. **How do you think assistance on adapting to sea level rise could be provided?** (See *Options for Preparing for Sea Level Rise* #56 - #61)
   Which options do you support or not support? Are there other ideas that you can share with us?

7. **Adapting to sea level rise can be costly for individuals, businesses and governments alike. Do you have ideas about how adaptation projects should be paid for?**
   Insurance Commissioner needs to meet needs of citizens, not the insurance companies 1st.

8. **Do you have any additional information or concerns you would like to share about flooding or sea level rise? Has it personally impacted you or your community?**
   The Sandy Hurricane

(optional) **Name:** _____

Address: _____

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Additional questions on other side →

Sea Level Rise Public Engagement Session

COMMENT FORM

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7. **Adapting to sea level rise can be costly for individuals, businesses and governments alike. Do you have ideas about how adaptation projects should be paid for?**

8. **Do you have any additional information or concerns you would like to share about flooding or sea level rise? Has it personally impacted you or your community?**

Don't Build in Flood Zones
Don't have Government Subisdy Flood Insurance

(optional) **Name:**

Address:

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1. **How do you think government agencies could better work together to address sea level rise?** (See *Options for Preparing for Sea Level Rise* #1 - #9)
   Which options do you support or not support? Are there other ideas that you can share with us?

   A
   CONTINUE BEACH REPLENISHMENT BY BRINGING OCEAN SAND BACK FROM WHERE IT WAS TAKEN BY OUR STORMS.

2. **How do you think planning and permitting for sea level rise adaptation could be improved?** (See *Options for Preparing for Sea Level Rise* #10 - #18)
   Which options do you support or not support? Are there other ideas that you can share with us?

   A
   CONTINUE WITH ABOVE

3. **How do you think policies for development and natural resources could be improved to adapt to sea level rise?** (See *Options for Preparing for Sea Level Rise* #19 - #32)
   Which options do you support or not support? Are there other ideas that you can share with us?

   A
   SAME AS ABOVE

4. **How do you think awareness of sea level rise impacts could be increased?** (See *Options for Preparing for Sea Level Rise* #33 - #36)
   Which options do you support or not support? Are there other ideas that you can share with us?

   A
   REAL ESTATE AGENCY SHOULD CONTINUE TO ADVISE ALL BUYERS THE FLOOD ZONE THEY ARE BUYING IN PRIOR TO INSPECTION.

Additional questions on other side →

Sea Level Rise Public Engagement Session

COMMENT FORM

5. **How do you think information about sea level rise could be improved and made available?** (See *Options for Preparing for Sea Level Rise* #37 - #55)
   Which options do you support or not support? Are there other ideas that you can share with us?

(A)

6. **How do you think assistance on adapting to sea level rise could be provided?** (See *Options for Preparing for Sea Level Rise* #56 - #61)
   Which options do you support or not support? Are there other ideas that you can share with us?

(A)

7. **Adapting to sea level rise can be costly for individuals, businesses and governments alike. Do you have ideas about how adaptation projects should be paid for?**

(A)

8. **Do you have any additional information or concerns you would like to share about flooding or sea level rise? Has it personally impacted you or your community?**

YES IT DOES IMPACT US —
CONTINUE BEACH REPLENISHMENT —
CONSIDER ALTERNATIVE TO ELEVATE
DWELLINGS ON THE BAYSIDE —
ALTERNATE WOULD BE BUYING UP
DWELLINGS AT THE FAIR MARKET
VALUE.

(optional) **Name:** _____

Address: _____

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1. **How do you think government agencies could better work together to address sea level rise?** (See *Options for Preparing for Sea Level Rise* #1 - #9)
   Which options do you support or not support? Are there other ideas that you can share with us?
   Support all. The new Indian River Bridge is already in danger. Many coastal areas have only one road access causing insufficient emergency access and evacuations.

2. **How do you think planning and permitting for sea level rise adaptation could be improved?** (See *Options for Preparing for Sea Level Rise* #10 - #18)
   Which options do you support or not support? Are there other ideas that you can share with us?
   All. - Especially #14 There is an urgent need to revise the ~~State~~ Delaware Strategies for State Policies and Spending which currently direct development toward existing communities. In eastern Sussex this is coastal. Already too many projects are approved, even if not yet developed. #18 Very important

3. **How do you think policies for development and natural resources could be improved to adapt to sea level rise?** (See *Options for Preparing for Sea Level Rise* #19 - #32)
   Which options do you support or not support? Are there other ideas that you can share with us?
   All - See above comments #19 very important #24 #26 #29 #32

4. **How do you think awareness of sea level rise impacts could be increased?** (See *Options for Preparing for Sea Level Rise* #33 - #36)
   Which options do you support or not support? Are there other ideas that you can share with us?
   #33 #34 also "non-impacted" communities who will experience secondary effects and rate!
   #35 yes!

Additional questions on other side →

Sea Level Rise Public Engagement Session

COMMENT FORM

5. **How do you think information about sea level rise could be improved and made available?** (See *Options for Preparing for Sea Level Rise* #37 - #55)
   Which options do you support or not support? Are there other ideas that you can share with us?
   Use separate maps showing impact over the years rather than showing it all on one map.
   Also #42, #43, #49, #50, #51, #52, #53, #54

6. **How do you think assistance on adapting to sea level rise could be provided?** (See *Options for Preparing for Sea Level Rise* #56 - #61)
   Which options do you support or not support? Are there other ideas that you can share with us?
   #56, #59, #60, #61
   In certain areas the state may need to purchase homes, allowing residents to remain without services, with land being public. As proposed by Gov Cuomo in NY.

7. **Adapting to sea level rise can be costly for individuals, businesses and governments alike. Do you have ideas about how adaptation projects should be paid for?**

8. **Do you have any additional information or concerns you would like to share about flooding or sea level rise? Has it personally impacted you or your community?**
   The coal ash storage from the Indian River Power Plant is very vulnerable to storm surge & sea level rise. This hazardous material should be moved.

(optional) **Name** [redacted]

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5. **How do you think information about sea level rise could be improved and made available?** (See *Options for Preparing for Sea Level Rise* #37 - #55)
   Which options do you support or not support? Are there other ideas that you can share with us?

Pointing out that proposed options are replete with DNREC JOB OPPORTUNITIES would be informative. Let people see how exaggerated inundation maps will drive down private property values. Best Management Practices imposed by bureaucrats are an unnecessary pompous assumption that they know "best" about every aspect of existence and activity.

6. **How do you think assistance on adapting to sea level rise could be provided?** (See *Options for Preparing for Sea Level Rise* #56 - #61)
   Which options do you support or not support? Are there other ideas that you can share with us?

Where does grant money originate, what is such money to accomplish? Industrial areas and Port of Wilmington would probably cope better with less governmental interference. Tourism meccas like Rehoboth and Lewes should pay for their own "amusement beaches" and facilities. Get the non-governmental organizations out of Delaware. DNREC should not micro-manage.

7. **Adapting to sea level rise can be costly for individuals, businesses and governments alike. Do you have ideas about how adaptation projects should be paid for?** YES

LET INVOLVED PARTIES PAY. LET THEM DEAL WITH THEIR POOR CHOICES OF LOCATION. SINCE DNREC & THE EPA DON'T REALLY KNOW "BEST", LET INDUSTRIES AND BUSINESSES DEVELOPE THEIR OWN COPING PLANS IF AND WHEN SUCH BECOME NECESSARY.

8. **Do you have any additional information or concerns you would like to share about flooding or sea level rise? Has it personally impacted you or your community?**

SEA LEVEL RISE appears to be presented as the news public crisis. WHY ELSE WOULD ABSURDLY HIGH UNSUBSTANTIATED 57" figures be used?

All citizens are taxed for developing alarmist scenarios. We are all regulated and controlled more and property rights are being eroded.

(optional) **Name:** [redacted]

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Your answers to these questions will help the Advisory Committee finalize its list of options for preparing Delaware for sea level rise.

Please answer as many of the questions as your time allows, and feel free to provide additional comments on another sheet or to the contacts listed on the back of this form.

For Questions 1-6, please refer to the document provided at the public engagements sessions entitled, "***Options for Preparing Delaware for Sea Level Rise: A Draft for Discussion at Sea Level Rise Public Engagement Sessions, February 2013***" for the list of proposed adaptation options from the Sea Level Rise Advisory Committee.

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1. **How do you think government agencies could better work together to address sea level rise?** (See *Options for Preparing for Sea Level Rise* #1 - #9)
   Which options do you support or not support? Are there other ideas that you can share with us?
   Considering that the exaggerated 57" sea level rise is not scientifically substantiated (and no one at the public programs could explain a rational cause) the suggested responses are likely to be excessive. Delaware should keep all non-governmental organizations from meddling and promoting counterproductive agendas.

2. **How do you think planning and permitting for sea level rise adaptation could be improved?** (See *Options for Preparing for Sea Level Rise* #10 - #18)
   Which options do you support or not support? Are there other ideas that you can share with us?
   Starting with rational assumptions is always a good approach. A 4'-9" sea level rise in this century has no basis in sound scientific research. DNREC offers no explanation for that high figure. DNREC inundation maps will suppress property values and enable NGOs like Sierra Club and Nature Conservancy to buy private property for wildland projects.

3. **How do you think policies for development and natural resources could be improved to adapt to sea level rise?** (See *Options for Preparing for Sea Level Rise* #19 - #32)
   Which options do you support or not support? Are there other ideas that you can share with us?
   Let "Ducks Unlimited" build and manage their own impoundments on private land. Save tax dollars. Minimize purchase of private property by the state. Let private investors take responsibility for purchasing low lying land.

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4. **How do you think awareness of sea level rise impacts could be increased?** (See *Options for Preparing for Sea Level Rise* #33 - #36)
   Which options do you support or not support? Are there other ideas that you can share with us?
   Delaware should stop building sand "front yards" on private property on beaches. Real Estate information should inform buyers of realistic flooding dangers. Federal flood insurance should not be used to encourage private construction on flood plains. Let private insurance address such properties. People will deliberately notice.

Additional questions on other side →

Sea Level Rise Public Engagement Session: Adaptation Options

Comments Received via Email and US Mail

Compiled on March 19, 2013

*the following pages contain the complete text of all comments received by the Delaware Coastal Programs office by email and US mail by the commenting deadline.

Delaware Alliance of Bay Communities
401 North Bayshore Drive
Milton, DE 19968

Pickering Beach, Kitts Hummock, South Bowers Beach
Slaughter Beach, Prime Hook Beach, Broadkill Beach
Agricultural, Maritime, and Ecological Communities
www.delabc.com

March 5, 2013

Delaware Coastal Programs
5 East Reed Street, Suite 201
Dover, DE 19901

Dear Members of the Sea Level Rise Advisory Committee:

The projected sea level rise will have significant impact on the State of Delaware. We face many challenges, the most difficult of which are centered on the existing communities, environs and infrastructure. With that in mind, we of the Alliance of Bay Communities would like to submit the following comments on the Options for Preparing Delaware for Sea Level Rise.

The document outlines 61 options, each of which appears to have some merit. Unfortunately, it does not appear that the Advisory Committee was able to prioritize these ideas and the presentation of the ideas as options rather than as recommendations suggests that an assessment of their relative merit is desired. There appear to be a significant number of new studies, models to be developed, and other complex projects to be undertaken. It seems unlikely that all of this work can be accomplished using currently available resources, but it is difficult to assess the relative value of each because no projected cost estimates or time-frames are provided, nor is it clear who would be responsible for each and whether key options already enjoy support from those who would be responsible for carrying them out.

We suggest as a top priority that a sequence of events and plans be initiated for implementation of the options that are directed at obtaining and using better data. This could begin with Option #43 Encourage the development of a research and policy center at a university or college campus that would focus on applied research for sea level rise and adaption. This option should be coupled with Option #44 Improve monitoring of current sea level conditions and improve prediction for timing of inundations, Option #54 Add additional tidal observation stations in Delaware, Option #55 Install inland inundation water level monitoring and Option #47 Develop sea level models that incorporate storm surge impacts. The hard data that would be produced by these efforts would support a more accurate projection of the impact of sea level rise at the local level. This would enable 10 year, 20 year, 30 year, et cetera, scenarios to be established for each community, region or environ. These timelines and projections would be the foundation upon which the implementation or assessment of the majority of the other options would be based. Thus, the policies and decisions of "protect, adapt, accommodate, or retreat" would be more logically recommended or adapted to each locality based on the conditions unique to each. For example, it does not seem worthwhile to engage in Option #60 Conduct a cost benefit analysis for without first having better information. The funding requirements would be more accurate and more readily able to be anticipated, thereby reducing, eliminating or circumventing some of the road blocks that are

bound to arise. The public outreach, so necessary, would be more easily presented, earn more credibility regarding projections of sea level rise, and perhaps be met with less skepticism.

While we believe that our above suggestions will complement and enhance the majority of the options in the document, we also believe that there are two options that should not be implemented until, at the very least, the data from Options 44, 47, 54, & 55 are available. These are Option #35 Improve the ability of home buyers to investigate a property's potential vulnerability to sea level prior to purchase, and Option #50, Encourage federal agencies to integrate sea level rise planning into their flood models. Homes in the 100-year flood plain are required to be reported in disclosures at present. Without better data, it is unclear how federal agencies would redraw the floodplain maps. Until specific data is available, reporting sea level rise vulnerability is conjecture and therefore should not be implemented.

Finally, the success of this initiative will require strong leadership with staff to plan and coordinate the implementation of so many disparate but interconnected activities. A number of the proposed options reflect basic staff work that could have been done already and will certainly need to be done. It seems to us that Option #14 Encourage the governor to sign an executive order that would direct state agencies to plan for sea level rise while laudable, is an inadequate governance mechanism for managing an issue of such importance to the State of Delaware. Inter-agency and inter-governmental coordination would be enhanced by appointing a high-level official (with staff) serving under the governor who would be the focal point for this entire effort.

Thank you for considering our suggestions.

James W. Bailey

Chairman

Comments on Sea Level Rise Advisory Committee Adaptation Strategies "Options" Paper

Overall. As I commented at the end of the March 14th SLRAC meeting, I applaud the professionalism, dedication, and hard work of the Coastal Program's staff and the stellar leadership of its director, Sarah Cooksey, in dealing with all the very complicated public and private policy crosscutting implications of sea level rise and a diversity of stakeholder interests and how best to address them going forward. The state has no more important set of issues before it requiring "whole cloth" policy development and direction.

- First and foremost, any strategic plan about options to prepare a state for sea level rise must consider and at the very least raise the need for public investments and resources essential to the plan. For the SLRAC to duck such a foundational issue is to not take responsibility for the mission it set out to do and the recommendations and options it has developed. I would urge a reset on this non-position and for the SLRAC to agree upon the simple premise that a credible broad-based revenue-raising means will be required to support SLR adaptation in the state of Delaware, including continued research and relevant capital and infrastructure investments.

- The Committee's choice to characterize its deliberations and work on sea level rise adaptation as "options" for "potential" inclusion in a State "Adaptation Plan" rather than a presentation of well-vetted and prioritized "recommendations" or policy directives for implementation feeds into a public perception that the Committee's work might be more of an academic exercise than a serious endeavor to move forward. To me, it lessens the sense of importance and urgency with regard to addressing climate change and sea level rise impacts and makes it easier for decision-makers, including elected officials, to "opt out" or play down action-oriented strategies, programs, policies, and the necessary commitment to investing required public funds. Where there was disagreement or lack of consensus among Committee members on a number of issues, e.g., disclosure of sea level rise vulnerabilities in prospective real estate transactions or "how to pay for public costs of addressing sea level rise impacts," suggesting various options might be appropriate. But where there was clear agreement on issues, recommendations make much more sense.

- One would have thought that "post Sandy" (and Irene) deliberations might have generated a more obvious dynamic among the Committee members with regard to demonstrating a greater sense of "urgency" or being on the frontline of crucial public policy-making. I didn't perceive a change in tone or a kind of "aha" moment. Yet, for example, up in New York, a major set of recommendations were generated almost overnight by a distinguished Governor-appointed commission to deal with and prepare

for future storm inundations in the near term as well as sea level rise in the longer term. Perhaps more discussion in the final report could be focused on portraying the experiences and impacts from the increasing frequency of coastal storms and surges as harbingers of things to come from sea level rise scenarios.

- I remain concerned with what I discern as a sharp public policy contrast between how the ocean communities and even the inland bays are looked at and talked about in the context of sea level rise as opposed to the bay shore coast communities and even up the coast to Wilmington and New Castle County. The "conversation" thus far has resulted in a "doom and gloom" scenario for the bay coast in terms of its built environment and resiliency and infrastructure investment while the economic engine that is the ocean coast and the inland bay developments continues to look essentially safe and secure.

- There are at least eight options dealing with DelDOT and transportation issues scattered through the various subcategories. Maybe a rethink of the categories being used and how the items are arrayed within them will provide a clearer document. Many of these are about matters and actions that DelDOT should already be doing in the course of business (e.g., "staying abreast of developments among peer agencies and the federal government regarding sea level rise, etc.).

Specific Comments and Observations.

Improve Communication and Coordination between State, Federal, Local and Regional Partners to Streamline Sea Level Rise Adaptation Efforts.

1. The list [of options] leads off here with a call to conduct a comprehensive study (or inventory) of policies, regulations, barriers, funding. It then makes the point that the limited time frame the committee had worked against doing such an admittedly important review or analysis. This is a perfect place to simply make a strong recommendation that a thorough review of all law (e.g., Beach Preservation Act, Coastal Zone Act, Public Accommodations Tax, etc.), regulations, and policies at all levels of government that impact on SLR adaptation should be conducted.

2. This is not really an option – one would rather see here some sort of affirmation that there already is a level of "coordination and cooperation" between the states and USDOT re SLR and then indicate what DelDOT has been doing in this regard and where it plans to go in the future re planning, policy (add this), operations, etc.

3. Again, wouldn't current DelDOT management already be doing this as a matter of course? Why not recommend such pilots in Delaware?

4. "What is an "adaptation project? Why is this an option rather than an assertive call for "streamlining" the multi-agency cross-cutting permitting process (es) – beyond simply "improving coordination" which again should not be seen as an "option" but for "redoing" the process itself where that is called for?

5. A truism but a necessary statement. No mention of the State Office of Planning role. No mention of the nexus or lack of one re planning between FWS and its CCPs for Delaware's two national wildlife refuges in this context. Should specifically mention the Port of Wilmington.

6. An important recommendation but would be more resonate if some examples would be cited and that existing partnerships should be "enhanced" where possible perhaps with more funding. Why not come right out and call for new pilot projects rather than talk about them theoretically?

7. Who is the "provider" here – DNREC? Why wouldn't this be happening now? What would be the stated purpose from a practical program point of view for doing this – to gradually end the easement program in pre-determined areas? Why would this be an option as opposed to constituting a management/policy decision?

8. Who would provide the assistance? This is similar to the Agricultural Land Preservation Program and raises the same question as to management/policy. "Additional assistance may be necessary to refine and modify criteria" [for acquisition] – so is this option suggesting funding is being sought?

9. There already is a Transportation Climate Change Resource Center in AASHTO. Why would this be an option anyway - one would expect there already is active sharing of information in this category.

Provide Increased Regulatory Flexibility for Adaptation and Improve Consistency between Regulatory Agency Decisions

10. While this is a laudable objective, "encourage" is a rather "wimpy" word to use for such an important aspect of preparatory SLR planning. Maybe a recommendation for an Executive Order from the Governor would be more appropriate (for this and related items as in 14 below).

11, 12, and 13. Waste treatment and septic systems protection of water and wells are all key to any rational SLR scenarios in the future if not already. Modern adequate public facilities and

infrastructure requirements and ordinances at the county and municipal level are clearly essential. The provision of state "guidelines" in 12 diminishes the underlying importance of competent land use management at the local level. Do other states use "guidelines" or do they have more robust requirements and penalties to enforce them? Drainage and storm water management or lack there-of go hand and hand with sensible public policy with regard to SLR planning not to mention today's environment.

14. This should be strengthened and a cabinet council should be established as part of any executive order.

15. Very important and perhaps leading to innovative positive incentives. Is the Delaware municipal league engaged in issues like this to any degree?

16, 17, and 18. As with many of the options cited in this category, updating, reviewing, increasing flexibility, streamlining are all good generic objectives.

Provide Consistent and Predictable Policies for Future Growth, Investment, and Natural Resource Management

General comment. I think that if these topical headings are going to be used in producing a draft document and ultimately a final product, each should have a brief discussion about what is intended under each heading. I would want to know, for example, why is consistency and why are predictable policies important values and objectives? What are the linkages between them and future growth, investment, and natural resource management? This would make the options or recommendations that follow more effective and clear.

19, 20, 21, 22, and 23. These all make sense. With respect to 23, is not AASHTO already doing this? If not maybe the recommendation from a vulnerable coastal state like Delaware should be to strongly recommend to AASHTO to do so with some alacrity.

24 - 32. Statewide retreat plans, disinvestment, shoreline zones for adaptation action, wetlands restoration and SLR, management strategies regarding federal coastal impoundments - these are all of extreme importance (though they should be organized more clearly) and will require the greatest of care in getting right – politically and socio-economically. At present the entire section is not ready for "prime time" - it comes across as a section that because of its far reaching impact might be called the "kiss of death" option/recommendation section. While the objective for introducing "predictability" in adaptation responses and "long term plans" makes absolute sense, the reality is that many on the bay coast and further north are increasingly living SLR "future" projected scenarios today as higher tides, more storminess and storm surges against a

backdrop of minimal shoreline maintenance and interior drainage and flooding protection infrastructure (i.e., dikes, tidal gates, levees, and dams) occur more frequently. In 28, does "urban" include any of the bay communities? Does not the state already have a strategy of strategic retreat? 25 must include in its "legal review" the very knotty questions of "equal protection" and "environmental justice." The fact is that current state (and federal) policy favors protecting the high-flying economy of the ocean beach and inland bay communities (in Sussex County) and by definition sustains private property values while focusing retreat, buyout, and abandonment scenarios on the rest of the coast. Regarding 26, the development of innovative and flexible approaches for encouraging and incentivizing movement of property owners from vulnerable areas should be a priority. In addition to TDR's, new forms of buyouts that might include longer term and novel arrangements should be explored. 27 would seem to present an urgent public priority regarding dike safety but the recommendation seems to lack the sense of urgency – it needs to be restated as requiring executive and probably legislative action. Yes to "beneficial reuse of sediment" in 29 and 30. But 29 needs perhaps to recognize the fact of built communities already wrapped up in a difficult but often symbiotic relationship with the natural infrastructure that protects and sustains interior wetlands and habitats. A case and point is the difficult intersection of federal (two national wildlife refuges), state, and local interests along the bay coast (Prime Hook and Bombay Hook). 30 might want to explore in detail the value of developing a "new" formal management collaboration (federal and state) for these two refuges that incorporates the interests of the diverse communities (including farms) that adjoins them. 32 should recognize and integrate the reality of the extensive research (EIS) process and management analysis that has already been done for the two federal refuges (CCP process).

Increase Public Awareness of Sea Level Rise through Education, Outreach and Marketing

33 is a key for sure.

34 needs to be more explicit that while there may be increased vulnerabilities for some communities rather than others regarding SLR impacts and related issues of drainage and stormwater, etc., i.e., ocean, inland bays, and bay/river, this exercise is about all communities just as insurance availability and costs are about all communities. Actually, I think insurance issues are kind of absent in any significant way from the current list of options. There should be more.

35 a hard one but maybe the Newark 'model" should be given some more space.

36 might include adding state, municipal, and county water and wastewater professionals.

Improve the Availability & Robustness of Sea Level Rise Data Sets

37 suggests that there may be a need for vulnerability "disclosure" here as well where people and businesses are living near dikes and levees with questionable maintenance regimens.

38, 39, 40, 41, and 42. All valuable – might mention agriculture in 42.

43 gets lost among a series of options about "data sets" and modeling options though it should almost be a stand-alone recommendation of great importance. A "center of excellence" or a "consortium" of research and policy resources that connect all relevant Delaware academic assets should be right out there along with the importance of the funding to make it all viable. (A smartly designed "coastal security and preservation tax" would be able to support such an endeavor as is done in New Jersey.

44. The recent apparent funding cuts here need to be addressed – again support from a tax as in 43 above could be utilized.

45. Why not encourage the private sector to take some initiative here?

46. This is a good place to also raise the need for stormwater management requirements in developments and applicable also to property owners where "adaptive measures" might result in "water trespass" on neighboring properties.

47 is very important but maybe here is an opportunity to explain why this is not already being pursued.

48. The Prime Hook area would be a good place to foster best management practices of agricultural land because the Farm Preservation Program is active there, salt water intrusion is increasing, and UD has been doing research at the College of Earth, Ocean, and Environment on non-traditional crops better suited to such conditions.

49 makes sense.

50. Would seem to me the implications of doing this are many and profound socio-economically and practically.

51. Of extreme importance and so far the inattention to consideration of the human side of SLR impact and current governmental policies and practices has made the job of outreach and education that much more difficult.

52. Didn't the DNREC 10-Year Bay Beach Management Plan produce a good model for this?

53, 54, and 55. All useful no doubt, especially important is 55. The more residents and property owners in the inland begin to understand that their interests are at risk just as the coast dwellers the more likely good policy and necessary resources will result.

Provide Technical Assistance to Partners for Assessing Vulnerability and Choosing Adaption Strategies

I would add "stakeholders" above as in Stakeholders and Partners.

56. This needs to be much stronger. Counties, especially Sussex, need to be responsible and develop technical expertise in these matters. They must of course coordinate and collaborate and not just in terms of emergency operations. There should be consequences for not doing so and a framework that would deny resources to local government not cooperating in this area should be explored. Here is another possible role for more energetic insurance regulation at the state level.

57 is good.

58. Who would "provide?" Suggest utilizing the U.S. Navy's vigorous effort and developing technical experience in adapting its world-wide port assets to SLR.

59. Very important, very useful, and helps with public education and outreach in a concrete way.

60, 61. Which coast is 60 referring to? The JMT cost benefit analysis has been done for seven bay coast communities almost two years ago and of course was reported on at the SLRAC meeting last week. The ocean communities depend upon such analyses to justify beach and dune renourishment almost forever and for the state contribution that is required. It would seem that the database of costs should be connected with a technical piece on the efficacy of the actual adaption options to be considered.

COMMENTS ON THE SEA LEVEL RISE MEETING 2/27/13

From [redacted]

The first thing to be done is to reduce the amount of greenhouse gases going into the atmosphere. Passive solar heating and cooling can save 50% of the cost of heating and cooling of a building. It is required by law in California. The legislature needs to copy this law for Delaware. The budget of Delaware is dominated by the cost of roads and highways. An alternative was proposed by the EPA in about 1990. It would have required companies with more than 100 employees at a site to formulate plans to reduce the number of cars coming to the site. This could involve charging for all parking, getting more than one person in a car, etc. It would produce a revenue-neutral system where those insisting on driving alone in their cars paid for the rest. When Newt Gingrich gained control of the U.S. House of Representatives, the plan was scuttled.

Delaware lacks good land use planning and is addicted to urban sprawl. Middletown is an environmental disaster. It has been changed from a compact, walkable town to highway strip commercialization where it is not possible to walk or bike safely. Some of the best agricultural land in the state has been lost in the process. The need is to provide connections to Wilmington and Dover by bus or train which are cheaper than driving alone in a car. This may involve raising the tolls on State route 1. Its intersection with I-95 next to the Christiana Mall was rebuilt a few years ago at a cost of $30 million. It is now being rebuilt at a cost of $119 million. It would be better to implement the plan mentioned above to get more than one person into a car. At the same time only $11 million is allocated for sidewalks and greenways. The only real solution to global climate change is conservation of energy.

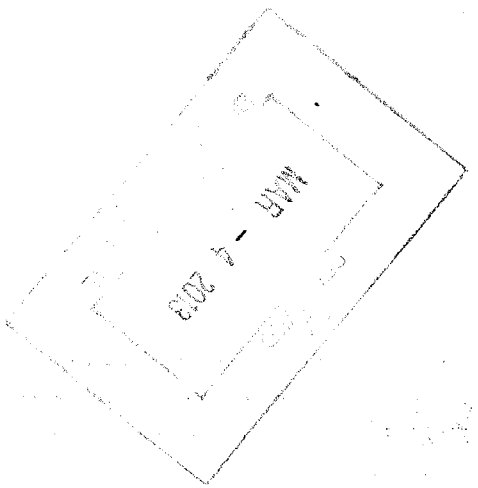
The only real solution to shoreline erosion is to retreat , as has occurred for the nearly 400 years of settlement of Delaware. There are some places where money is wasted. The residents of Primehook Beach could pay for raising their road to DOT standards and for passing to Broadkill Beach. DNREC should not pay for these. Beach nourishment is a waste of money. When this was done at Fowler's Beach, it lasted only 6 weeks before a storm breached the dune again. It is disappointing that the plan for Primehook Refuge proposes to close the breach again. We hope that science can dominate over local politics. After the 1962 storm that damaged Rehoboth, Governor Petersen suggested that no houses should be built on the barrier strip and that he would provide buses to get people to the beach. This advice was not followed, so there are houses at South Bethany Beach about to fall into the sea. When such houses fall into the sea, replacement should not be allowed. No federal flood insurance should be allowed in such areas. As it is, taxpayers put up $3 for every dollar that the homeowner puts up. The Bush administration wanted to stop beach enrichment in Delaware but our congressional delegation intervened to retain it.

OLS

1 of 2

A storm surge can break a dike, as at Fowler's Beach. It can overtop a levee, as at New Orleans in Katrina. It can cross a barrier island as in the opening of the entrance to the harbor at Ocean City, MD. No bulkheads should be put in. Money could be saved by using drones instead of manned aircraft for wildlife censuses. Money could be saved by making roads last longer by including ground rubber tires in the asphalt . A tax could be added on property that floods. New York is going to eliminate construction on flood-prone areas as a result of Sandy. Money should not be wasted on deepening the channel in the Delaware River. The refineries that could have benefited from it are no longer refining oil. However, the dredging is to be continued. Clean dredge spoil could be used to raise Pea Patch Island., as is being done at Popular Island in Maryland. Septic systems that might flood can be converted with composting toilets , surface mound septic systems, grinder pumping to higher elevations and waterless urinals.

Consider the inclusion of the sea level rise experts, Orin Pilke of Duke University and John Kraft of the University of Delaware to your committee. You may also want to see Annie Leonard "Story of Broke" , which explains why we say that we don't have enough money to do the things that ought to be done. It can be found through Google.



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Sea Level Rise Adaptation Options

COMMENT FORM

From: League of Women Voters of Delaware
March 15, 2013

The League of Women Voters of Delaware supports all of the proposed options except for Option #16, as noted below. Those that the League feels should be a top priorities are listed using the red font, second priorities in a green font.

Option #16 is the only one of the options that could do more harm than good, and should be excluded from this list. "Flexibility" usually means something like, "forget the law exists," and could make the Coastal Zone Act a worthless piece of paper. There's already far more flexibility in interpreting this law than the architects of the law would have wanted.

For Questions 1-6, please refer to the document provided at the public engagements sessions entitled, "**Options for Preparing Delaware for Sea Level Rise: A Draft for Discussion at Sea Level Rise Public Engagement Sessions, February 2013**" for the list of proposed adaptation options from the Sea Level Rise Advisory Committee.

1.How do you think government agencies could better work together to address sea level rise? (See Options for Preparing for Sea Level Rise #1 - #9) Which options do you support or not support? Are there other ideas that you can share with us?

#1 Conducting a comprehensive inventory allows for a base level and relative value to be established for all state and regional planning.

#5 Require that sea level rise be considered in public and private sector regional planning.

#6 Create new partnerships to increase resources for research and development of adaptation options.

2. How do you think planning and permitting for sea level rise adaptation could be improved? (See Options for Preparing for Sea Level Rise #10 - #18) □Which options do you support or not support? Are there other ideas that you can share with us?

#10 Require regional planning agencies and DelDOT to work together on early

transportation planning and conceptual infrastructure design for SLR.

#11 Require the connection of individual septic systems to community systems already in existence.

#12 Develop local and county ordinances requiring consideration of SLR in the siting and maintenance of public infrastructure.

#14 Encourage the governor to sign an executive order that would direct state agencies to plan for sea level rise.

#15 Provide regulatory incentives that encourage sea level rise adaptation and that allow for innovative projects.

#17 Create a financial assurance program to minimize the state's liability to clean up industrial sites if they are abandoned as a result of sea level rise. Taxpayers should be protected if contaminated industrial sites are flooded and abandoned. One site of concern to us is the coal ash pile on Burton Island at the Indian River Power Plant. Other sites of concern are brownfield sites in Wilmington.

#18 Conducting an update to the tidal\fresh water wetlands maps is essential, also keeping the maps further updated.

3. How do you think policies for development and natural resources could be improved to adapt to sea level rise? (See Options for Preparing for Sea Level Rise #19 - #32) □Which options do you support or not support? Are there other ideas that you can share with us?

#19 Incorporate SLR considerations into the Strategies for State Policies and Spending. The State should consider allowing the Strategies to have the force of law.

#20 Incorporate SLR considerations into municipal and county comprehensive development plans. Legislation should require that sea level rise must be considered in their comprehensive development plans.

Options #21, 22 and 23 are other absolutely crucial pieces of the sea level rise adaptation puzzle. Consideration of roadway planning in areas which will be flooded in the near future would help greatly in steering development away from those areas, as well as save valuable tax dollars that might be almost literally washed away.

#24 Develop a statewide retreat plan and update it periodically. While other adaptation options (e.g., beach sand replenishment, raising buildings on pilings, or building dikes) may be preferred in coming decades, the science indicates that continuing to increase emissions every year with business-as-usual as we have will eventually require retreat as the only viable option. A good retreat plan – updated periodically as the climate and sea level change – might save wasted

money and resources.

#25 Conduct a legal review for divestment of publically owned infrastructure and privately owned buildings. A good example of where a legal review might be desirable is the likely loss of ready access and property values in the Prime Hook Beach community if DelDOT stops making repeated costly repairs to the Prime Hook Beach Road and if the state stops paying the $500 per day fee to permit residents to drive on private land to get to and from Prime Hook Beach. Secretary O'Mara has said that public funds should be used only if there is a public benefit. Prime Hook Beach is a private gated community that does not allow public access to the beach.

#26 Consider use of a Transfer of Development Rights tool to direct future growth away from vulnerable areas. TDRs have potential in encouraging retreat and in saving taxpayer dollars.

29 Develop comprehensive wetlands protection, restoration or retreat strategies.

4. How do you think awareness of sea level rise impacts could be increased? (See Options for Preparing for Sea Level Rise #33 - #36)□Which options do you support or not support? Are there other ideas that you can share with us?

#33 Develop a comprehensive outreach strategy to educate the public, both youth and adults, about sea level rise.

#35 Homebuyers must be warned not only of sea level rise issues related to the properties in which they have an interest, but also of the cost and availability of flood insurance.

5. How do you think information about sea level rise could be improved and made available? (See Options for Preparing for Sea Level Rise #37 - #55) □Which options do you support or not support? Are there other ideas that you can share with us?

#38 Develop and maintain a comprehensive database that contains information on all wastewater infrastructure.

#43 Encourage the development of a research and policy center at a university or college campus that would focus on applied research for sea level rise and adaptation.

#47 Develop sea level models that incorporate storm surge impacts.

#49 Identify and preserve areas for potential wetlands migration.

#50 Encourage federal agencies to integrate sea level rise planning into their flood models especially NFIP and FEMA.

#51 Conduct research to better understand human response to sea level rise and adaptation.

6. How do you think assistance on adapting to sea level rise could be provided? (See Options for Preparing for Sea Level Rise #56 - #61) □Which options do you support or not support? Are there other ideas that you can share with us?

#56 Create a coordinated effort to provide technical assistance to local and county governments. Small communities, especially, will benefit from this assistance.

#59 Develop best management practice manuals for adaptation in Delaware.

#60 Conduct a cost benefit analysis for adaptation.

#61 Develop a database of costs of adaptation options for use by decision-makers and the public. The database should include past adaptation experiences – including dates, description of the work done and its total costs, and costs per unit (e.g., cubic yards of added to a beach, feet or meters of dike or road repaired, feet of elevation added to structures), as well as the name and contact information of the contractor who did the work – as well as projections of likely future costs.

7. Adapting to sea level rise can be costly for individuals, businesses and governments alike. Do you have ideas about how adaptation projects should be paid for?
Suggested funding sources:

- Consider a coastal security tax
- Increase the tax on hotels and motels in the coastal towns. Extend the fee to include homes and apartments near the coast rented by the week, month or season. Also, allow funding for bayshore communities as well as seashore communities.
- Increase real estate transfer taxes and building permit fees for homes and other buildings sold or built near the coast.
- All counties and municipalities should assess properties for their full value.
- Require communities or individuals that do not allow public access to the beaches in front of their properties to pay for most of the costs for beach sand replenishment and maintenance road access.
- Pass a small carbon tax of $2.00 per ton of CO2 from all sources, with the idea that it would increase in the future as adaptation and recovery from coastal storms become more costly.
- Put a surcharge on the toll to Route 1 to fund SLR adaptation of transportation infrastructure.

8. Do you have any additional information or concerns you would like to share about flooding or sea level rise? Has it personally impacted you or your community?

- Potential buyers and developers of property in Delaware should be made aware of any risks of sea level rise by their realtors. It is unethical that these risks be kept from disclosure.
- The state should require that the Insurance Commissioner's office in cooperation with DNREC's coastal programs set up a central place or database where residents, potential buyers and communities can get up-to-date information on storm and flood insurance availability and costs from both private and public sources.
- The Delaware Vulnerability Assessment was limited to the three scenarios of sea level rise, but said nothing about the conclusions of leading scientists that the sea level rise could be different from what was predicted in 2012. The public and policy makers must be kept informed about the best available science as it develops.

- An important overarching issue that was not addressed in the document option section is social justice. For example, there are 200 homes in Prime Hook and twice that many in Southbridge in Wilmington, yet Prime Hook's homes have received many more resources than those in Southbridge. Equal limits of reimbursement from the state or federal government should be put on properties which must rebuild or retreat from flooding. In this way, social justice would be served.
- The accumulative impact of both storm surge and wave action should be included in all SLR options.
- While the Advisory Committee was asked only to study Delaware's vulnerability to SLR, and to make recommendations for adaptation options, any sensible plan to deal with SLR must include vigorous mitigation.

[redacted]

All,

I am happy to submit the attached public comments on behalf of the New Castle County Congregations of Delaware Interfaith Power and Light. The final draft of comments was adopted by consensus at the regular March meeting of NC3 of DeIPL, held last night at St. Paul's United Methodist Church.
Our comments are typed into the standard COMMENT FORM with those 10 we consider to have the highest priority marked with an asterisk (*) and a red font; those 14 with a high priority are marked with a green font. Comments to Questions 7. and 8. toward the end of the FORM were assigned numbers #100 through #105.

Thank you for the opportunity to provide public comment.

Sincerely,

Chad Tolman and Mike Rominger

on behalf of NC3 of DeIPL

Sea Level Rise Public Engagement Session
COMMENT FORM

From: New Castle County Congregations of DE Interfaith Power and Light March 13, 2013

Your answers to these questions will help the Advisory Committee finalize its list of options for preparing Delaware for sea level rise.

Please answer as many of the questions as your time allows, and feel free to provide additional comments on another sheet or to the contacts listed on the back of this form.

For Questions 1-6, please refer to the document provided at the public engagements sessions entitled, "**Options for Preparing Delaware for Sea Level Rise: A Draft for Discussion at Sea Level Rise Public Engagement Sessions, February 2013**" for the list of proposed adaptation options from the Sea Level Rise Advisory Committee.

We support all 61 of the options in the document named above; however we give a higher priority to the ones listed below; those we consider to have the highest priority marked with an asterisk (*) and a red font. Some additional options not included in the list of 61 are shown on pages 6 and 7 of this form and are given numbers starting with #100.

1. How do you think government agencies could better work together to address sea level rise? (See Options for Preparing for Sea Level Rise #1 - #9) □Which options do you support or not support? Are there other ideas that you can share with us?

#5 Incorporate sea level rise into public and private sector regional planning.

#6 Create new partnerships to increase resources for research and development of adaptation options. efforts.

2. How do you think planning and permitting for sea level rise adaptation could be improved? (See Options for Preparing for Sea Level Rise #10 - #18) □Which options do you support or not support? Are there other ideas that you can share with us?

#14 Encourage the governor to sign an executive order that would direct state agencies to plan for sea level rise.

#15 Provide regulatory incentives that encourage sea level rise adaptation and that allow for innovative projects.

#17 Create a financial assurance program to minimize the state's liability to clean up industrial sites if they are abandoned as a result of sea level rise.

Protecting taxpayers if contaminated industrial sites are abandoned is a very good idea. One site of concern to us is the coal ash pile on Burton Island at the Indian River Power Plant. How would the funds be raised to protect the state from having to pay for future cleanup as sea level continues to rise?

3. How do you think policies for development and natural resources could be improved to adapt to sea level rise? (See Options for Preparing for Sea Level Rise #19 - #32) □Which options do you support or not support? Are there other ideas that you can share with us?

#20* Incorporate sea level rise considerations into municipal comprehensive development plans.

#24 Develop a statewide retreat plan.

While other adaptation options (e.g., beach sand replenishment, raising buildings on pilings, or building dikes) may be preferred in coming decades, the science indicates that continuing to increase emissions every year with business-as-usual as we have will eventually require retreat as the only viable option. A good retreat plan – updated periodically as the climate and sea level change – might save wasted money and resources.

#25 Conduct a legal review for disinvestment of publically owned infrastructure and privately owned buildings.

A good example of where a legal review might be desirable is the likely loss of ready access and property values in the Prime Hook Beach community if DelDOT stops making repeated costly repairs to the Prime Hook Beach Road and if the state stops paying the $500 per day fee to permit residents to drive on private land to get to and from Prime Hook Beach. Secretary O'Mara has said that public funds should be used only if there is a public benefit. Prime Hook Beach is a private gated community that does not public access to the beach.

#26 Consider use of a Transfer of Development RIghts tool to direct future growth away from vulnerable areas.

4. How do you think awareness of sea level rise impacts could be increased? (See Options for Preparing for Sea Level Rise #33 - #36)□Which options do you support or not support? Are there other ideas that you can share with us?

#33* Develop a comprehensive outreach strategy to educate the public about sea level rise.

It is important to begin teaching children about the underlying science and

history of weather, climate, sea level rise and coastal storms – beginning no later than junior high school. This instruction should be part of the state science curriculum standards. We should learn what other states have done and copy the best practices.

#35 Improve the ability of homebuyers to investigate a property's potential vulnerability to sea level prior to purchase.

Homebuyers – especially those from inland states who may not be aware of the risks posed by sea level rise and coastal storms, should be able to get reliable information on which to base an informed purchasing decision. Whether or not this information is provided by the seller, the buyer should be informed where he or she can find it. Buyers should also be informed about the cost and availability of flood insurance.

5. How do you think information about sea level rise could be improved and made available? (See Options for Preparing for Sea Level Rise #37 - #55) □Which options do you support or not support? Are there other ideas that you can share with us?

#43 Encourage the development of a research and policy center at a university or college campus that would focus on applied research for sea level rise and adaptation.

Research might include the best practices and models (e.g., for saltwater intrusion into ground water) developed in other places, as well as public attitudes toward everything from how fast they think the sea level might rise to their sources of funding to prepare for and respond to sea level rise and coastal sorms – especially in the face of record federal deficits.

#47* Develop sea level models that incorporate storm surge impacts.

This is very important because coastal storms and flooding are likely to become more damaging as sea surface temperatures, precipitation and wind speeds increase. Any thoughtful forecast of future vulnerability and costs must consider storm surge and precipitation on top of 'bathtub' sea level rise.

#50* Encourage federal agencies to integrate sea level rise planning into their flood models.

It is important that NFIP and FEMA develop flood plain maps that are regularly updated to account for the most recent flood and coastal storm data. This is especially true since federal flood insurance is based on these maps.

#51 Conduct research to better understand human response to sea level rise and adaptation.

This is certainly important and could be combined with #43.

6. How do you think assistance on adapting to sea level rise could be provided? (See Options for Preparing for Sea Level Rise #56 - #61) □Which options do you support or not support? Are there other ideas that you can share with us?

#59 Develop best management practice manuals for adaptation in Delaware.

These manuals are a really good idea as they could be very helpful to both individuals and communities. They could be developed in collaboration with faculty at colleges and universities, including those involved in #43 and #51 above.

#60 Conduct a cost benefit analysis for adaptation.

This would be helpful in deciding among adaptation options.

#61* Develop a database of costs of adaptation options for use by decision-makers and the public.

The database should include past adaptation experiences – including dates, description of the work done and its total costs, and costs per unit (e.g., cubic yards of added to a beach, feet or meters of dike or road repaired, feet of elevation added to structures), as well as the name and contact information of the contractor who did the work – as well as projections of likely future costs. An example involving beach sand replenishment costs is shown below.

Sand Replenishment

The Sunday News Journal on Dec. 30, 2012 ran a front-page article by Jeff Montgomery and Molly Murray titled, **Sand Wars**. In it they listed the amounts of sand added to coastal beaches and their total costs since 1960. We added the average cost per cubic yard (yd^3) over the 52-year period.

Table 1. Average Costs of Sand per Cubic Yard from 1960 to 2012

State	Millions of cu. yds	Millions of dollars	Average Cost/yd^3
New York	106.2	$252.2	$2.37
New Jersey	138.6	$664.7	$4.80
Delaware	18.2	$134.2	$7.37
Maryland	14.3	$89.7	$6.27
Virginia	27.3	$148.9	$5.45
North Carolina	98.4	$404.6	$4.11

The article said, "Delaware tentatively set Sandy's erosion toll on Atlantic Ocean beaches between Lewes and Fenwick Island at 2 million yd^3 – 65 percent of the total amount deposited across those shorelines since 2009, which cost about $35 million." That implies that 3.1 million yd^3 of sand were added during the three years from 2009 through 2012 – just over 1 million yd^3 a year – at a cost of over $11 per yd^3. Since Delaware added only 18.2 million yd^3 in the 52 years since 1960 (an average of 0.35 million yd^3 per year), it is clear that both the annual

amount of sand added per year and the costs per yd^3 are increasing. Competition among coastal states for a diminishing supply of suitable beach sand nearby will surely drive prices higher.

The Editorial page, in an article titled, **Public's Interest Rules Debate on Shore**, said, "The costs are rising faster than the sea. There just isn't enough sand to plug all of the gaps and build all of the dunes we believe are necessary to preserve a way of life along our coasts." It goes on to quote Collin O'Mara saying, "There has to be a clear public benefit to justify the expenditure of public resources". "That means no private subsidies, no special treatment of selected individuals or favored communities."

7. Adapting to sea level rise can be costly for individuals, businesses and governments alike. Do you have ideas about how adaptation projects should be paid for?

NOTE: Items in Categories 7. And 8. have been assigned Item numbers (e.g., #100) of 100 or more to distinguish them from the 61 in the Options list.

#100* Adaptation to sea level rise is going to be very expensive, with costs increasing substantially going into the future, as increases in temperature, ice loss and sea level accelerate. While it's not clear where the needed funds are going to come from, it is clear that those who enjoy the benefits of living or vacationing near the coast are going to have to share much more of the financial burden. Here are some funding sources to consider:

- Increase the daily fee for those renting rooms by the night in hotels and motels near the coast.
- Extend the fee to include homes and apartments near the coast rented by the week, month or season.
- Increase real estate transfer taxes and building permit fees for homes and other buildings sold or built near the coast.
- Require communities or individuals that do not allow public access to the beaches in front of their properties to pay for most of the costs for beach sand replenishment and maintaining road access. Prime Hook Beach is a prime example.
- Pass a small carbon tax of $2.00 per ton of CO2 from all sources, with the idea that it would increase in the future as adaptation and recovery from coastal storms become more costly. This tax would correspond to 0.2¢ per kWh for electricity from coal, and 0.1¢ per kWh for electricity from natural gas. It would raise the price of gasoline by about 2¢ per gallon. Income for the state would be over $20 million per year.

8. Do you have any additional information or concerns you would like to share about flooding or sea level rise? Has it personally impacted you or your community?

#101* While storm surge impacts are listed separately in #47, the potential for increased damage from storm surge and wave action should be included in the consideration of all of the sea level rise adaptation options – especially since both are likely to increase in a warming world.

#102* There needs to be a central place where individuals and communities can get up-to-date information on storm and flood insurance availability and costs from both private and public sources, and how they are changing with time. The Insurance Commissioners office should work with DNREC Coastal Programs to see that the information is available and that property owners, buyers and builders know where to go to get it.

#103 The Vulnerability Assessment was limited to the three scenarios of sea level rise of 0.5, 1 and 1.5 meters by 2100, but said nothing about the conclusions of leading scientists that:

- sea level could increase by a lot more than 1.5 meters by 2100 – depending largely on what happens to carbon emissions and to the rates of ice loss from Greenland and Antarctica.
- sea level rise is not going to stop in 2100, but is likely to continue for 1000 years – with much larger changes in the next century than in this one.
- Continuing business-as-usual global carbon emissions (increasing by 3%/yr) until 2100 is likely to put most of Delaware's land area under water within a few centuries.

The public and policy makers must be kept informed about the best available science as it develops.

#104* While the Advisory Committee was asked only to study Delaware's vulnerability to sea level rise, and to make recommendations for adaptation options, **any sensible plan to deal with sea level rise must include vigorous mitigation measures** – doing all we can to slow the rate and extent of sea level rise by dramatically reducing our carbon emissions (carbon dioxide, methane and particulate black carbon) from all sources. While Delaware is responsible for only a small fraction of global carbon emissions, if we can show that we can become a leader in mitigation as well as adaptation – while developing a thriving green 21st Century economy and providing more jobs – we might be able to convince other, larger states, and eventually the whole country, to follow our lead. Without U.S. leadership, it is unlikely that other large emitters like China and India will reduce their emissions – until it is too late for all of us.

In the **Stern Review on the Economics of Climate Change**, published in 2006, Nicholas Stern estimated that avoiding the worst impacts of climate change – through both mitigation and adaptation - could be achieved at a cost of 1% of world GDP per year, thus avoiding economic losses as great as 5 to 20% of world GDP each year. In view of climate changes more rapid than expected, he later revised the annual cost upward to 2% of GDP per year (http://en.wikipedia.org/wiki/Stern_Review). Since the population of Delaware is

about 0.3% of the U.S. population, the state's annual GDP must be on the order of 0.3% of the U.S. GDP of $16T, or about $50B; 2% if that would mean an investment in Delaware of $1B per year. Five to twenty percent of the state's GDP would mean $2.5B to $10B each year in potential losses – most of which would be due to sea level rise and coastal storms.

#105* An important overarching issue that was not addressed in the document, "Options for Preparing Delaware for Sea Level Rise…" is social justice. The ones who will suffer the most – the poor, the elderly, the women and children (including those not yet born) – are least responsible for the carbon emissions that are causing most of the sea level rise and increasingly powerful coastal storms. Their suffering should be minimized - especially under conditions when there will not nearly enough money to make everyone whole after significant sea level rise and major storms.

(optional) Name:

Chad Tolman and Mike Rominger for the New Castle County Coalition of Delaware Interfaith Power and Light (NC3 of DeIPL)

Address: [redacted]

This survey is also available online at: https://www.surveymonkey.com/s/sealeveladaptationcomments. □Please place this form in the comment box, email to DNREC_DCP_PublicComment@state.de.us, or Mail to: Delaware Coastal Programs, 5 East Reed Street, Ste 201, Dover, DE 19901 Comments Due By March 14

Under State law this survey form is public domain, and if requested, a copy of it must be provided to the public or media.

NRDC
THE EARTH'S BEST DEFENSE

NATURAL RESOURCES DEFENSE COUNCIL

March 14, 2013

Submitted via email to DNREC_DCP_PublicComment@state.de.us

Delaware Coastal Programs
Delaware Department of Natural Resources and Environmental Control (DNREC)
5 East Reed Street, Suite 201
Dover, DE 19901

Re: *Options for Preparing Delaware for Sea Level Rise: A Draft for Discussion at Sea Level Rise Engagement Sessions, February 2013*

Dear Delaware Coastal Programs:

These comments are submitted by the **Natural Resources Defense Council (NRDC)**, which on behalf of our more than 1.3 million members and online activists, including approximately 1,400 in Delaware, uses law and science to protect the planet's wildlife and wild places and to ensure a safe and healthy environment for all living things.

NRDC appreciates the opportunity to comment on options the State is considering for preparing for sea level rise. As described in Delaware's recent sea level rise vulnerability study, substantial amounts of homes, land, buildings, infrastructure, and natural resources are at risk from flooding due to sea level rise.[1] We commend Delaware for taking steps to both identify the State's vulnerabilities to sea level rise and to develop and implement strategies to address these vulnerabilities. However, we urge the State to expand its consideration of climate change to include impacts beyond sea level rise in successive planning efforts. Warmer temperatures and changes in historical precipitation patterns will have wide-ranging implications for Delaware, including diminished seasonal streamflows, decreased groundwater recharge, and potential increases in flooding risks, among other impacts.[2] The State would be ill-advised to not plan and prepare for these climate impacts as well.

Moreover, as this list of options is further refined, the State should improve the organization and sequencing of these options. The draft does not sequence the proposed options, and options that are

[1] Delaware Coastal Programs, Department of Natural Resources and Environmental Control, *Preparing for Tomorrow's High Tide: Sea Level Rise Vulnerability Assessment for the State of Delaware* (2012), www.dnrec.delaware.gov/coastal/Pages/SLR/DelawareSLRVulnerabilityAssessment.aspx.

[2] Danielle Kreeger, Jennifer Adkins, Priscilla Cole, Ray Najjar, David Velinsky, Paula Conolly, and John Kraeuter, *Climate Change and the Delaware Estuary: Three Case Studies in Vulnerability Assessment and Adaptation Planning* (May 2010), delawareestuary.org/pdf/Climate/Climate%20Change%20and%20the%20Delaware%20Estuary_PDE-10-01.pdf.

interconnected often are placed in separate categories. For instance, the signing of an executive order by the governor (option 14) should be one of the first actions that the State undertakes even though it is listed in the middle of the second category. Additionally, Delaware will need to identify and preserve areas for potential wetland migration (option 49) either before or in conjunction with the development a statewide wetlands restoration strategy (option 29). The land acquisition activities of the Open Space Council (option 8) also should be coordinated with the development of a wetlands restoration strategy. Although these three options are clearly related, they are located in separate categories in the draft. Similarly, the development of a dike safety program (option 27) and conducting a risk assessment of dikes and levees (option 37) are in different categories even though these options are connected. For the sake of clarity and to facilitate implementation, related options should be grouped together and sequenced in the final list.

As the State's climate preparedness planning efforts move forward, it will be crucial to articulate concrete and measureable goals and actions that state agencies will undertake to address likely sea level rise impacts. Without establishing a clear understanding of what actions and responsibilities specific state agencies will take to address climate impacts, success in building climate resilience will be difficult to achieve.

With respect to the questions the State has posed on the comment form, we offer the following comments.

1. **How do you think government agencies could better work together to address sea level rise?**

The challenges that states are likely to face from climate change require significant coordination and collaboration among the different levels of government, nonprofit organizations, the private sector, and other stakeholders. Further, there are substantial opportunities for states to share knowledge and experiences regarding climate preparedness, to pool staffing and funding resources, and to coordinate management decisions of shared resources. We support efforts to increase collaboration among the many different stakeholders that will be involved in preparing for climate change. Building these collaborative and nontraditional partnerships will be crucial to managing risks as climate change intensifies.

Identifying opportunities and obstacles to effective adaptation during the planning process can help prioritize strategies for implementation in the near-term that are most likely to be successful given existing funding resources, regulations, and regulatory authorities. Establishing a uniform set of future sea level rise estimates also is important for supporting the incorporation of sea level rise into permitting decisions, regional planning efforts, and open space protection programs. Further, developing new research and pilot program partnerships can help to facilitate the creation of innovative solutions that previously were unknown or not under consideration. However, new solutions and techniques should be carefully analyzed before being widely implemented so that unintended consequences and environmental harms are minimized. The establishment of sea level rise and climate change groups within professional organizations such as AASHTO (option 9) and other groups with

expansive state government membership can help facilitate the sharing of knowledge and experiences about best practices for climate adaptation.

Delaware should establish a permanent interagency committee, containing at a minimum members of all relevant state agencies, to ensure the continued coordination of state-level climate change adaptation activities and to oversee the implementation of adaptation strategies. For example, California has established a Climate Action Team composed of state agencies, boards, and departments to coordinate the implementation of global warming pollution reduction and adaptation programs.[3]

2. How do you think planning and permitting for sea level rise adaptation could be improved?

Formal legislative and/or executive-level support is critical for affirming, sustaining, and institutionalizing climate preparedness actions on the part of state agencies. Several states have used executive orders to require state agencies to consider climate change impacts. Most recently, Governor Martin O'Malley of Maryland signed an executive order directing:

- State agencies to consider coastal flooding and sea level rise risks in the siting, design, and construction of new and substantially redeveloped state buildings;
- The Department of General Services to update engineering and design guidelines to require state agencies to elevate new and rebuilt state structures two or more feet above the 100-year flood level;
- The Department of Natural Resources to develop recommendations for siting and design requirements for coastal state infrastructure such as roads, bridges, and water systems and non-state infrastructure that receive public funds; and
- The state's climate change commission to update statewide sea level rise projections based on the latest climate science.[4]

While we applaud DNREC Secretary Collin O'Mara for instituting a sea level rise policy in 2010,[5] all relevant state agencies are unlikely to implement climate preparedness actions without formal requirements by the state legislature or the executive branch. Additionally, legislative or executive-level actions can help to ensure that the integration of sea level rise and other climate impacts into operations and planning is consistent among state agencies. As previously mentioned, the establishment of uniform sea level rise estimates is one of the critical initial steps for facilitating the consideration of sea level rise by state agencies and other parties . Subsequently, state and local

[3] "Climate Action Team & Climate Action Initiative," State of California, www.climatechange.ca.gov/climate_action_team/.
[4] Executive Order 01.01.2012.29, State of Maryland Executive Department, www.governor.maryland.gov/executiveorders/01.01.2012.29.pdf.
[5] Delaware DNREC, "Administrative Policies and Provisions: D-1306 - Sea Level Rise Adaptation," www.dnrec.delaware.gov/coastal/Documents/SLR%20Advisory%20Committee/D-1306%20DNREC%20SLR%20policy%20FINAL%20signed.pdf.

decision-makers will need guidance on how to integrate sea level rise impacts into planning, permitting, siting, and design processes for coastal development projects.

Delaware also has a key opportunity to consider climate change impacts in the development of its 2013 state hazard mitigation plan. Past risk is no longer a sufficient indicator of future risk, and the existing 2010 state hazard mitigation plan neglects to comprehensively consider climate change risks. Local communities, such as the City of Lewes, have integrated climate change considerations into their hazard mitigation planning.[6] The State should follow suit and comprehensively assess *all* hazards and risks (including impacts related to climate change) and develop mitigation strategies during the state hazard mitigation planning process, so that it can be prepared when climate-related disasters strike.

We also support the integration of sea level rise projections into updates to regulations, maps, and other decision-support tools. Incorporating sea level rise into these areas will help to ensure consistency and provide support for state, regional, and local decision-makers.

While we support efforts to encourage consideration of sea level rise impacts at the local level as described in option 12, states can take more assertive action to make state funding for local projects contingent on the consideration of climate change and sea level rise impacts. For example, the California Ocean Protection Council has adopted a resolution stating that state agencies and private entities implementing projects either using state funds or located on state property must consider sea level rise risks.[7] Similarly, several state grant programs in California require applicants to consider potential sea level rise impacts.[8]

Additionally, Delaware should require permit applicants under Coastal Zone Act regulations to consider and address the impacts of climate change and sea level rise. Given the risks that climate change poses, the impacts of sea level rise, flooding, erosion, etc. must be taken into account in the State's permit review and approval process.

3. **How do you think policies for development and natural resources could be improved to adapt to sea level rise?**

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[6] *See* Delaware Sea Grant College Program et al., *The City of Lewes Hazard Mitigation and Climate Adaptation Action Plan* (2011), www.ci.lewes.de.us/pdfs/Lewes_Hazard_Mitigation_and_CLimate_Adaptation_Action_Plan_FinalDraft_8-2011.pdf.

[7] California Ocean Protection Council, *Resolution of the California Ocean Protection Council on Sea Level Rise*, adopted March 11, 2011, www.slc.ca.gov/Sea_Level_Rise/OPC_SeaLevelRise_Resolution_Adopted031111.pdf.

[8] *See* State of California Strategic Growth Council, *Sustainable Communities Planning Grant and Incentives Program–Grant Guidelines & Application* (2011), 4, www.sgc.ca.gov/docs/funding/PGIP-guidelines2011.pdf and State of California Coastal Conservancy, *Guidance for Addressing Climate Change in California Coastal Conservancy Projects* (2011), www.scc.ca.gov/2011/04/06/guidance-for-addressing-climate-change-in-california-coastal-conservancy-projects.

Sea level rise and other climate change impacts should be fully integrated into relevant state policies and planning processes. By doing so, Delaware can ensure that public funding is not provided to projects or programs that do not consider climate change and that local land use decisions carefully consider sea level rise risks. Siting and building structures in vulnerable areas without considering climate change impacts potentially increases vulnerability to coastal hazards.

Additionally, the State would be well served to have proactive and deliberate consideration about what types of shoreline protection are appropriate for various coastal areas. As mentioned in options 24, 25, and 28, it may not be economically practical or environmentally sensible to armor all coastal areas. Shoreline armoring techniques like seawalls can exacerbate erosion, degrade coastal ecosystems, and disrupt sediment transport.[9] Delaware can and should consider measures that restrict shoreline armoring, which can amplify the impacts of sea level rise in adjacent areas.[10] The State can look to what other states have done to address the effects of erosion and sea level rise along the coast:

- A Maine statute provides that no project may be permitted, "if, within 100 years, the property may reasonably be expected to be eroded" and provides that "no new seawall may be constructed."[11]

- Rhode Island bars essentially all erosion-control structures along the oceanfront portion of its coast.[12]

- In Oregon, regulations bar all permits for shoreline armoring for all development built after 1977, and permitted structures must avoid or minimize impact to resource values, including habitat quality.[13]

- Massachusetts regulations stipulate that development on coastal dunes may not interfere with "the landward or lateral movement of the dune" and that development on unconsolidated banks will not be allowed to use seawalls to prevent erosion, except for bank structures existing at the time of the law's passage (1978).[14]

- A North Carolina statute provides that no "permanent erosion control structure may be erected "in an ocean shoreline."[15]

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[9] Committee on Mitigating Shore Erosion along Sheltered Coasts, National Research Council, "Mitigating Eroding Sheltered Shorelines: A Trade-Off in Ecosystem Services," *Mitigating Shore Erosion along Sheltered Coasts* (National Academies Press, 2007), www.nap.edu/catalog/11764.html.

[10] M. Caldwell and C.H. Segall, "No Day at the Beach: Sea Level Rise, Ecosystem Loss, and Public Access Along the California Coast," 34 *Ecology L.Q.* 533 (207), www.boalt.org/elq/documents/elq34-2-09-caldwell-2007-0910.pdf.

[11] Maine Coastal Sand Dune Rules, ch. 355-5(C)-(E).

[12] Rhode Island Coastal Resources Management Program §300.7(D)(1).

[13] Oregon Administrative Rule 736-020-0010(6).

[14] Code of Massachusetts Regulations, 310 C.M.R. §10.28.

[15] North Carolina General Statute §§113A-115.1.

- A Maryland statute requires the use of "non-structural shoreline stabilization measures that preserve the natural environment, such as marsh creation" where feasible to protect against shoreline erosion.[16]

Further, in some particularly vulnerable areas, it may be more appropriate to relocate structures as sea levels rise and not rebuild structures that are severely damaged by coastal flooding and storms. Delaware should consider developing a voluntary buy-out program for properties that are either susceptible to or severely damaged by coastal flooding as is being proposed in New York State through the Recreate NY-Home Buyout program.[17] Properties that are acquired under this proposed program will be converted into natural areas that provide buffers against future flooding.

Instead of relying on "gray" or "hard" infrastructure approaches, the State should maximize the use of less expensive, decentralized approaches that can be implemented more quickly and avoid adverse effects, while actually providing a range of environmental, economic, and social co-benefits beyond flood control. In particular, natural infrastructure approaches – including "soft edges" like wetlands, oyster reefs, and dunes along coastlines; and "green infrastructure" within the built environment – can substantially reduce flooding from both storm surges and intense rainfall, offsetting the need for some of the more expensive approaches.

Techniques such as the restoration of coastal wetlands, oyster reefs, and dunes, utilize natural features to mitigate storm surge, flooding, and erosion risks. These natural features serve to absorb storm surge and flood waters and dissipate wave energy. They also provide wildlife habitat, enhance fisheries, maintain natural shoreline dynamics, filter water pollutants, and preserve public access to the shoreline.[18] We support the development of a comprehensive wetlands restoration strategy (option 29) to take advantage of the multiple benefits that wetlands provide.

Apart from sea level rise and storm surge, more intense rain events are another consequence of climate change. In addition to flooding, excessive stormwater runoff carries large amounts of pollution into waterways and can combine with storm surge flooding to overwhelm wastewater treatment plants and cause sewage backups into streets and basements. Green infrastructure techniques utilize soils and vegetation in the built environment to absorb runoff close to where it falls, limiting flooding and sewer backups. Green infrastructure such as green roofs, rain gardens, roadside plantings, porous pavement, and rainwater harvesting not only reduce flooding and protect water quality – they also transform rainwater from a source of pollution into a valuable resource that helps to literally green the urban landscape, cool and cleanse the air, enhance water supplies, reduce asthma and heat-related illnesses,

[16] Maryland Environment Code Ann. §16-201.
[17] "New York Rising," Rebuild NY, www.governor.ny.gov/2013/rebuild-ny.
[18] "Alternative Shoreline Stabilization Methods," NOAA Office of Ocean and Coastal Resource Management, revised October 2, 2012, coastalmanagement.noaa.gov/initiatives/shoreline_stabilization.html.

cut heating and cooling energy costs, create urban oases of open space, and enhance property values.[19] The State should maximize use of green infrastructure techniques to address stormwater management and water quality problems, which will only intensify with climate change.

Because these natural infrastructure solutions are decentralized and implemented at multiple locations, they are flexible and adaptable—an important characteristic given the likelihood that future hydrologic conditions will become increasingly volatile and unpredictable due to climate change. These approaches allow for planning to be incremental, continuous, and easily modified when climatic and hydrologic conditions change.

4. How do you think awareness of sea level rise impacts could be increased?

We support all of the options in this category (options 33-36). Educating the public and at-risk communities about the impacts of sea level rise and climate change can advance preparedness planning goals in several ways. Citizen engagement and public opinion can be used effectively to persuade government and elected officials to prepare for the impacts of climate change. Many policies also will need public support in order to be successful. Reaching out to affected communities and educating them about climate change risks and the need for preparedness can help to build support for policies and measures that reduce vulnerability. Additionally, people that are aware of climate change risks can make better informed decisions, including where they purchase homes and whether they make investments or support development in at-risk areas. In public education and outreach efforts, the State should establish clear communication goals and determine whether active (e.g., door-to-door visits, town hall meetings) and/or passive methods (e.g., websites, newsletters) will be utilized. As part of this process, Delaware should consider the needs of particularly vulnerable populations, including the elderly, low-income groups, and people with limited English-language proficiency. The State also should consider recording sea level rise risk information on plat maps, zoning maps, and property titles and deeds in addition to disclosure during real estate transactions (option 35).

The impacts of a changing climate inevitably will challenge water utilities across the U.S. by exacerbating existing water resource issues (e.g., water supply, stormwater management) as well as presenting new challenges (e.g., sea level rise, long-term shifts in streamflow hydrology, more intense extreme weather events). Oftentimes, local and regional stakeholders lack the capacity or data necessary to integrate climate change information into long range water resources planning and operations. Providing outreach and assistance to water utilities and operators on planning for sea level rise and climate change impacts can help to reduce the vulnerability of critical water and wastewater systems. We encourage the State to utilize existing resources and tools available through organizations such as the U.S. Environmental Protection Agency's Climate Ready Water Utilities program to ensure that utility managers and operators have access to the necessary information and tools to effectively prepare for climate change impacts. However, targeted outreach to water utilities and operators (option 36) would

[19] NRDC, "The Multiple Benefits of Green Infrastructure Solutions," *Rooftops to Rivers II* (2011), 13-16, www.nrdc.org/water/pollution/rooftopsii/files/rooftopstoriversII.pdf.

seemingly better fit in the last category on providing technical assistance to partners instead of in the public awareness category.

5. **How do you think information about sea level rise could be improved and made available?**

We support the State's efforts to better understand the potential repercussions of sea level rise for communities, infrastructure, and natural resources through data collection, monitoring, modeling, and other research initiatives. These initiatives are critical to informing understanding of the ecological, hydrologic, and socioeconomic impacts of climate change. Furthermore, designing and implementing effective adaptation strategies will require an understanding of climate impacts already underway and greater capabilities to assess and forecast changes over time.

We concur with option 50 that Delaware and other coastal states should urge federal agencies, particularly FEMA, to incorporate sea level rise estimates into floodplain modeling and mapping. Incorporating sea level rise into these models more accurately represents flooding risks and will help policymakers and residents better assess vulnerability.

6. **How do you think assistance on adapting to sea level rise could be provided?**

We support efforts to provide technical assistance to local and regional governments, resource managers, businesses, and other decision-makers. These stakeholders play a key role in building resilience to climate impacts because many decisions regarding land use and resource management are made at the local level. Oftentimes, these stakeholders lack the technical capacity or data necessary to integrate climate change information into planning and operations. Providing information, guidance, and support to these decision-makers will be integral to building the State's resilience to the impacts of climate change.

7. **Adapting to sea level rise can be costly for individuals, businesses and governments alike. Do you have ideas about how adaptation projects should be paid for?**

It is generally less costly to consider and address climate change risks during the planning, siting, and design process than to retrofit or relocate structures after construction is complete. Accordingly, the State should fully integrate climate change considerations into project planning and permitting processes. The eligibility criteria for existing state grant and loan programs, such as the Water Pollution Control Revolving Fund (WPCRF) and the Drinking Water State Revolving Fund (DWSRF), can be modified to require grant applicants to proactively consider climate change risks—these programs also can be utilized to fund adaptation projects. Additionally, there are numerous potential federal funding programs to support the implementation of preparedness strategies. These include programs within NOAA, FEMA, EPA, the U.S. Army Corps, and Department of Housing and Urban Development, among others. In addition, funding for projects implemented in partnership with nonprofit organizations may be available from private and charitable foundations. Some states also have developed funding

mechanisms to support the implementation of climate preparedness strategies. Please see the attached Appendix for examples of potential federal and state funding programs.

According to a recent NRDC report, approximately 20 percent of U.S. states have conducted comprehensive planning to prepare for climate change impacts.[20] We commend Delaware for taking steps to join these ranks by developing a sea level rise adaptation plan. Thank you again for the opportunity to comment on the discussion draft. If you should have any questions, please do not hesitate to contact me.

Sincerely,

Ben Chou
Policy Analyst, Water Program

[20] NRDC, *Ready or Not: An Evaluation of State Climate and Water Preparedness Planning* (2012), www.nrdc.org/water/readiness.

Appendix – Examples of Federal and State Funding Programs

Program	Description	Additional Information
CDC Climate-Ready States & Cities Initiative	This initiative provides CDC funding and technical support to city and state health departments to address the public health implications of climate change. Assistance is provided to anticipate health effects by applying climate science, predicting health impacts and preparing flexible programs.	www.cdc.gov/climateandhealth/climate_ready.htm
Chesapeake Bay Stewardship Fund	The fund issues grants and technical assistance to local communities to restore and protect water quality and habitats within the Chesapeake Bay watershed.	www.nfwf.org/Pages/chesapeake/home1.aspx
HUD Community Development Block Grant (CDBG) Program	The CDBG program works to ensure decent affordable housing, to provide services to the most vulnerable in our communities and to create jobs through the expansion and retention of businesses by allocating funding to states and local jurisdictions. Projects must meet one of the following national objectives for the program: benefit low- and moderate-income persons, prevent or eliminate slums or blight, or address urgent community development needs because existing conditions pose a serious and immediate threat to the health or welfare of the community.	portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/communitydevelopment/programs
HUD Sustainable Communities Regional Planning Grants	The program supports metropolitan and multijurisdictional planning efforts that integrate housing, land use, economic and workforce development, transportation and infrastructure investments in a manner that empowers jurisdictions to consider the challenges of economic competitiveness and revitalization; social equity, inclusion and access to opportunity; energy use and climate change; and public health and environmental impact.	portal.hud.gov/hudportal/HUD?src=/program_offices/sustainable_housing_communities/sustainable_communities_regional_planning_grants

HUD Community Challenge Grants	This grant program fosters reform and reduces barriers to achieving affordable, economically vital and sustainable communities. Such efforts may include amending or replacing local master plans, zoning codes and building codes, either on a jurisdiction-wide basis or in a specific neighborhood, district, corridor or sector, to promote mixed-use development, affordable housing, the reuse of older buildings and structures for new purposes, and similar activities with the goal of promoting sustainability at the local or neighborhood level.	portal.hud.gov/hudportal/HUD?src=/program_offices/sustainable_housing_communities/HUD-DOT_Community_Challenge_Grants
U.S. DOT Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grants	This grant program provides investments in innovative road, rail, transit and port projects.	www.dot.gov/tiger
U.S. EPA Community Action for a Renewed Environment (CARE)	The CARE program helps communities address multiple sources of toxic pollutants in their environment.	www.epa.gov/care/basic.htm
U.S. EPA Environmental Education Grants	The Environmental Education Grants program offers funding to support environmental education projects that increase the public's awareness about environmental issues and provide participants with the skills to take responsible actions to protect the environment.	www.epa.gov/enviroed
U.S. EPA Five Star Restoration Program	The program provides challenge grants, technical support and opportunities for information exchange to enable community-based projects to restore wetlands and streams.	water.epa.gov/grants_funding/wetlands/restore/index.cfm
FEMA Hazard Mitigation Grant Program (HMGP)	The HMGP provides grants to states and local governments to take measures to reduce the risk of loss of life and property from future disasters during the reconstruction process following a major disaster declaration.	www.fema.gov/hazard-mitigation-grant-program
FEMA Pre-Disaster Mitigation (PDM) Grant Program	The PDM program provides grants for hazard mitigation planning to reduce risks to populations and structures prior to a disaster event.	www.fema.gov/pre-disaster-mitigation-grant-program

FEMA Flood Mitigation Assistance (FMA)	Through the FMA, communities are eligible for planning and project grants to prepare flood mitigation plans, which reduce or eliminate claims under the National Flood Insurance Program (NFIP). Projects can include the acquisition, elevation or relocation of NFIP-insured structures.	www.fema.gov/flood-mitigation-assistance-program
FEMA Repetitive Flood Claims Program	Funds are available to states and communities to reduce flood damages to insured properties that have made one or more claims to the National Flood Insurance Program (NFIP).	www.fema.gov/repetitive-flood-claims-program
FEMA Severe Repetitive Loss Program	The program provides funds to reduce or eliminate long-term risk of flood damage to severe repetitive loss structures (structures that have at least four NFIP claim payments or claim payments that exceed the market value of the structure).	www.fema.gov/repetitive-flood-claims-program
FEMA Public Assistance Grant Program	Funds are available to assist state and local governments to respond to and recover from presidentially declared disasters. Assistance is available for debris removal, emergency protective measures, and repair, restoration, reconstruction or replacement of public facilities or infrastructure damaged or destroyed.	www.fema.gov/public-assistance-local-state-tribal-and-non-profit
FEMA Community Assistance Program—State Support Services Element (CAP-SSSE)	This program provides funding to states to give technical assistance to communities in the National Flood Insurance Program (NFIP) and to evaluate community performance in implementing NFIP floodplain management activities.	www.fema.gov/national-flood-insurance-program-1/community-assistance-program-state-support-services-element
National Fish and Wildlife Foundation	The foundation provides funding for projects that sustain, restore and enhance fish, wildlife and plants and their habitats.	www.nfwf.org/Pages/grants/home.aspx

NOAA Coastal Zone Management Administration Awards	The Office of Coastal Resource Management (OCRM) provides 1:1 matching funds for states to administer their coastal zone management programs. Funds have been used for enhancing public access, protecting and restoring coastal habitat, mitigating coastal hazards, ocean planning, managing coastal community development and protecting coastal water quality.	coastalmanagement.noaa.gov/funding/welcome.html
NOAA Coastal Zone Enhancement Program (CZMA Section 309)	This program encourages federally approved coastal management initiatives to develop programmatic changes or enhancements in one of nine areas: wetlands, coastal hazards, public access, marine debris, cumulative and secondary impacts, special area management plans, ocean/Great Lakes resources, energy and government facility siting, and aquaculture.	coastalmanagement.noaa.gov/enhanc.html
NOAA Climate Program Office—Climate and Societal Interactions (CSI) Program	CSI helps society adapt to a changing climate by providing funding for projects to better understand and anticipate changes in climate and, consequently, inform decision-making and climate risk management.	cpo.noaa.gov/ClimatePrograms/ClimateSocietalInteractionsCSI.aspx
NOAA Coastal Services Center (CSC)	CSC provides data, tools, training and technical assistance to state and local governments to address the challenges associated with flooding, hurricanes, sea level rise and other coastal hazards. Funding opportunities are posted on the CSC website as they are made available.	www.csc.noaa.gov/funding/
NOAA Office of Habitat Conservation	Several times a year, funds are made available for individual coastal and marine habitat restoration and protection projects.	www.habitat.noaa.gov/funding/
National Park Service Land and Water Conservation Fund (LWCF)	Grants are available to state and local governments for the acquisition of park and recreation land, development of recreation facilities and redevelopment of older recreation facilities.	www.nps.gov/ncrc/programs/lwcf/fed_state.html
NOAA/U.S. Army Corps Estuary Habitat Restoration Program	The program provides technical assistance and federal funding for estuary habitat restoration projects.	www.era.noaa.gov/information/funding.html

U.S. Army Corps Beach Erosion Control Projects	The Corps of Engineers designs and constructs projects to control beach and shore erosion along public shores.	www.cfda.gov/index?s=program&mode=form&tab=step1&id=de50d106792bf01c0d24133395c1fd22
U.S. Army Corps Flood Control Projects	The Corps of Engineers designs and constructs projects to reduce flood damage.	www.cfda.gov/?s=program&mode=form&tab=step1&id=2216ee03c69db437c431036a5585ede6
U.S. Army Corps Protection of Essential Highways, Highway Bridge Approaches and Public Works	The Corps of Engineers designs and constructs projects to provide bank protection of highways, highway bridges, essential public works, churches, hospitals, schools and other nonprofit public entities endangered by flood-caused erosion.	www.cfda.gov/index?s=program&mode=form&tab=step1&id=7ba50e5ed3a412dce7c6187479c96a84
U.S. Army Corps Project Modifications for Improvement of the Environment	This program provides for modifications in the structures and operations of water resources projects constructed by the Corps of Engineers, to improve the quality of the environment. The Corps may undertake restoration projects at locations where an existing Corps project has contributed to degradation. The primary goal of these projects is ecosystem restoration, with an emphasis on projects benefiting fish and wildlife.	ofmpub.epa.gov/apex/watershedfunding/f?p=116:2:0::NO::P2_X_PROG_NUM,P2_X_YEAR:109,2013
U.S. Army Corps Shore Damage Attributable to Federal Navigation Works	This program provides for the prevention or mitigation of erosion damage to public or privately owned shores along the coastline of the United States when this damage is the result of a federal navigation project.	ofmpub.epa.gov/apex/watershedfunding/f?p=116:2:0::NO::P2_X_PROG_NUM,P2_X_YEAR:106,2013
U.S. Army Corps Small Flood Damage Reduction Projects	This program provides for local protection from flooding by the construction or improvement of structural flood damage reduction features such as levees, channels and dams. Nonstructural alternatives, such as installation of flood warning systems, raising and/or flood-proofing of structures and relocation of flood-prone facilities, also are considered.	ofmpub.epa.gov/apex/watershedfunding/f?p=116:2:0::NO::P2_X_PROG_NUM,P2_X_YEAR:108,2013

USDA Water and Waste Disposal Loans and Grants	The Rural Utilities Service provides loans, guaranteed loans and grants for water, sewer, stormwater and solid waste disposal facilities in cities and towns of up to 10,000 people and in rural areas with no population limits.	www.rurdev.usda.gov/UWP-dispdirectloansgrants.htm
USDA Conservation Reserve Program (CRP)	Through CRP, agricultural landowners can receive annual rental payments and cost-share assistance to convert highly erodible cropland or other environmentally sensitive land to long-term, resource-conserving cover on eligible farmland.	www.fsa.usda.gov/FSA/webapp?area=home&subject=copr&topic=crp
USDA Farm and Ranch Lands Protection Program (FRPP)	FRPP provides matching funds to acquire conservation easements or other interests in land from landowners to keep productive farm and ranchland in agricultural use.	www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/easements/farmranch
USDA Wetlands Reserve Program (WRP)	WRP provides technical and financial support to help landowners protect, restore and enhance wetlands on their property. These include permanent easements, 30-year easements or contracts, and restoration cost-share agreements.	www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/easements/wetlands
U.S. Economic Development Administration - Public Works and Economic Adjustment Assistance Programs	The Public Works program provides funding to communities to upgrade physical infrastructure to enhance economic opportunities. The Economic Adjustment program provides funding to states and communities to design and implement strategies to change economies, particularly in areas that are under serious threat of structural damage to their economic base.	www.eda.gov/PDF/FY_2012_EDAP_FFO_11-18-11_FINAL.pdf
U.S. Fish and Wildlife Service - North American Wetlands Conservation Fund	This fund supports the conservation of North American wetland ecosystems for waterfowl, other migratory birds, fish and wildlife. Grants are available for projects that involve long-term protection, restoration, and/or enhancement of wetlands and associated upland habitats.	www.fws.gov/birdhabitat/Grants/NAWCA/index.shtm

U.S. Fish and Wildlife Service - National Coastal Wetlands Conservation Grant Program	This program provides funding to states for the acquisition, restoration, management or enhancement of coastal wetlands.	www.fws.gov/coastal/coastalgrants/
California Proposition 84: Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006	The Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (Proposition 84) authorized general obligation bonds to fund safe drinking water, water quality and supply, flood control, waterway and natural resource protection, water pollution and contamination control, state and local park improvements, public access to natural resources and water conservation efforts.	bondaccountability.resources.ca.gov/p84.aspx
California Proposition 1E: Disaster Preparedness and Flood Protection Bond Act	The Disaster Preparedness and Flood Protection Bond Act of 2006 (Proposition 1E) authorizes $4.09 billion in general obligation bonds to rebuild and repair California's most vulnerable flood-control structures to protect homes and prevent loss of life from flood-related disasters, including levee failures, flash floods and mudslides, and to protect California's drinking water supply system by rebuilding delta levees that are vulnerable to earthquakes and storms.	bondaccountability.resources.ca.gov/p1e.aspx
Massachusetts Community Preservation Act (CPA) Trust Fund	CPA is a smart-growth tool that helps communities preserve open space and historic sites, create affordable housing and develop outdoor recreational facilities. CPA also helps strengthen the state and local economies by expanding housing opportunities and construction jobs for the Commonwealth's workforce, and by supporting the tourism industry through preservation of the Commonwealth's historic and natural resources.	www.communitypreservation.org/

Massachusetts Coastal Pollutant Remediation (CPR) Grant Program	The CPR Grant Program was established in 1996 by the Massachusetts Legislature to help communities identify and improve water quality impaired by nonpoint source pollution. The CPR program provides funding to Massachusetts municipalities to assess and remediate stormwater pollution from paved surfaces or to design and construct boat waste pump-out facilities. Since 1996, more than $6 million in CPR grants has been awarded.	www.mass.gov/czm/cprgp.htm

Sea Level Rise Public Engagement Session

COMMENT FORM

Your answers to these questions will help the Advisory Committee finalize its list of options for preparing Delaware for sea level rise.

Please answer as many of the questions as your time allows, and feel free to provide additional comments on another sheet or to the contacts listed on the back of this form.

For Questions 1-6, please refer to the document provided at the public engagements sessions entitled, "***Options for Preparing Delaware for Sea Level Rise: A Draft for Discussion at Sea Level Rise Public Engagement Sessions, February 2013***" for the list of proposed adaptation options from the Sea Level Rise Advisory Committee.

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1. **How do you think government agencies could better work together to address sea level rise?** (See *Options for Preparing for Sea Level Rise* #1 - #9)
   Which options do you support or not support? Are there other ideas that you can share with us?
   Considering that the exaggerated 57" sea level rise is not scientifically substantiated (and no one at the public programs could explain a rational cause) the suggested responses are likely to be excessive. Delaware should keep all non-governmental organizations from meddling and promoting counterproductive agendas.

2. **How do you think planning and permitting for sea level rise adaptation could be improved?** (See *Options for Preparing for Sea Level Rise* #10 - #18)
   Which options do you support or not support? Are there other ideas that you can share with us?
   Starting with rational assumptions is always a good approach. A 4'-9" sea level rise in this century has no basis in sound scientific research. DNREC offers no explanation for that high figure. DNREC inundation maps will suppress property values and enable NGOs like Sierra Club and Nature Conservancy to buy private property for wildland projects.

3. **How do you think policies for development and natural resources could be improved to adapt to sea level rise?** (See *Options for Preparing for Sea Level Rise* #19 - #32)
   Which options do you support or not support? Are there other ideas that you can share with us?
   Let "Ducks Unlimited" build and manage their own impoundments on private land. Save tax dollars. Minimize purchase of private property by the state. Let private investors take responsibility for purchasing low lying land.

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4. **How do you think awareness of sea level rise impacts could be increased?** (See *Options for Preparing for Sea Level Rise* #33 - #36)
   Which options do you support or not support? Are there other ideas that you can share with us?
   Delaware should stop building sand "front yards" on private property on beaches. Real Estate information should inform buyers of realistic flooding dangers. Federal flood insurance should not be used to encourage private construction on flood plains. Let private insurance address such properties. People will deliberately notice.

Additional questions on other side →

Sea Level Rise Public Engagement Session

COMMENT FORM

5. **How do you think information about sea level rise could be improved and made available?** (See *Options for Preparing for Sea Level Rise* #37 - #55)
   Which options do you support or not support? Are there other ideas that you can share with us?

Pointing out that proposed options are replete with DNREC JOB OPPORTUNITIES would be informative. Let people see how exaggerated inundation maps will drive down private property values. Best Management Practices imposed by bureaucrats are an unnecessary pompous assumption that they know "best" about every aspect of existence and activity.

6. **How do you think assistance on adapting to sea level rise could be provided?** (See *Options for Preparing for Sea Level Rise* #56 - #61)
   Which options do you support or not support? Are there other ideas that you can share with us?

Where does grant money originate, what is such money to accomplish? Industrial areas and Port of Wilmington would probably cope better with less governmental interferences. Tourism meccas like Rehoboth and Lewes should pay for their own "amusement beaches" and facilities. Cut the non-governmental organizations out of Delaware. DNREC should not micro manage.

7. **Adapting to sea level rise can be costly for individuals, businesses and governments alike. Do you have ideas about how adaptation projects should be paid for?** YES

LET INVOLVED PARTIES PAY. LET THEM DEAL WITH THEIR POOR CHOICES OF LOCATION. SINCE DNREC & THE EPA DON'T REALLY KNOW "BEST", LET INDUSTRIES AND BUSINESSES DEVELOPE THEIR OWN COPING PLANS IF AND WHEN SUCH BECOME NECESSARY

8. **Do you have any additional information or concerns you would like to share about flooding or sea level rise? Has it personally impacted you or your community?**

SEA LEVEL RISE appears to be presented as the news public crises. WHY ELSE WOULD ABSURDLY HIGH UNSUBSTANTIATED 57" figures be used?

All citizens are taxed for developing alarmist scenarios. We are all regulated and controlled more and property rights are being eroded.

(optional) **Name:** [redacted]

Address: [redacted]

This survey is also available online at:
https://www.surveymonkey.com/s/sealeveladaptationcomments
Please place this form in the comment box, email to DNREC_DCP_PublicComment@state.de.us, or
Mail to: Delaware Coastal Programs, 5 East Reed Street, Ste 201, Dover, DE 19901
Comments Due By March 14

Sea Level Rise Public Engagement Session
COMMENT FORM

1. How do you think government agencies could better work together to address sea level rise? (See *Options for Preparing for Sea Level Rise* #1 - #9)

I would emphasize the prioritization of public & private sector planning and creation of partnerships for research & development, #5 & #6.

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2. How do you think planning and permitting for sea level rise adaptation could be improved? (See *Options for Preparing for Sea Level Rise* #10 - #18)

I would place priority on #14, 15, and 17, and in addition would add local land use ordinances (#12) that require examination of the impact of sea rise. The state should provide some assistance through guidelines as many locales may not have the resources to make informed decisions. I believe that if land use decisions are made primarily locally we need local entities to consider the impact of environmental change will have BEFORE infrastructure etc is developed. This relates to #20 which I have identified as a high priority below.

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3. How do you think policies for development and natural resources could be improved to adapt to sea level rise? (See *Options for Preparing for Sea Level Rise* #19 - #32)

Top priority should be given to #20. Also, #24 is a high priority. We need to recognize that in some cases it makes no sense to try to hold back the sea, and building a dike or something else at enormous cost that may only be effective for a decade or so and may not make sense. Similarly some reconstruction after hurricanes may not be reasonable and we should think this thru and have made decisions in advance because in the moment of disaster emotion takes over. In relation to #26 I feel that we need to do everything we can to direct future growth away from vulnerable areas.

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4. How do you think awareness of sea level rise impacts could be increased? (See *Options for Preparing for Sea Level Rise* #33 - #36)

I think that educating the public on this issue is critical though there is a line to be walked between causing unproductive panic and ignoring the problem. This should get high priorty (#33).

Think giving homebuyers this information is not only right but it also is likely to increase general knowledge about the issue in a very concrete, non-theoretical way. (#35)

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5. How do you think information about sea level rise could be improved and made available? (See *Options for Preparing for Sea Level Rise* #37 - #55)

I very much agree with improving the data sets overall as addressed in this section, but would add that these should be made available so that the public can look at the data. And the data – at least the most central of it – should be available in such a way that it is accessible (understandable) if not to the general public, at least to folks who have a feel for science and data (understanding that you have to be careful about the danger of misinterpretation).

I would give priority to the development of a research/policy center at a local institution of higher education, #43, as this can serve both the data needs and dissemination of information. Might also somewhere include education of teachers in climate issues (including this one) and identifying the most effective to teach kids about those issues.

Data should include development of models that incorporate storm surge (#47) and federal agencies should certainly integrate rising sea level into their flood models (#50).

#49 in some ways doesn't fit this heading – it is partially the identification of areas for wetland migration but it also would require some policies and action. (Some of the other items

under this heading also go beyond developing data sets and making information available.) However I strongly support including wildlife needs into data gathering and research and into planning.

I would give #51 high priority and feel it could combine with #43. We need to understand how people are responding not only to the actual occurrences, but to the information about the issue. We need to understand how to impact behavior, but we also need to know how to impact attitudes and beliefs. I would not limit this to coastal residents – it will take all of us supporting the activities, agreeing to incur costs, etc.

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6. How do you think assistance on adapting to sea level rise could be provided? (See *Options for Preparing for Sea Level Rise* #56 - #61)

I'd put a high priority on #56, since if, as indicated above, local communities are responsible for much of the decision making around planning etc., they need to have the technical support to make good choices.

Along the same lines, I think the best practices manual in #59 would be an excellent tool and give it a high priority along with the database on costs of adaptation options for use by decision makers and the public (#61). This ideally would also give estimates of the cost of not doing anything.

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7. Adapting to sea level rise can be costly for individuals, businesses and governments alike. Ideas about how to pay for them.

Some ideas might include a carbon tax, higher building permit fees for coastal areas, charging vacationers a surcharge on their rent for a week or month, and attaching a daily fee for those renting by the night in hotels or motels. I think private communities should be paying for their private beaches when those beaches are not open for public use.

There might be opportunity/advantage in trying to partner with some of our sister states who face similar issues so that if we decide (for example) to put a surcharge on rentals etc. in vacation spots along the beach, we aren't the only places with a surcharge. Hopefully, our neighboring coastline states will be examining these issues too.

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8. Do you have any additional information or concerns you would like to share about flooding or sea level rise? Has it personally impacted you or your community?

Any study or long-range planning on this issue needs to include the impact of global warming if it is to be honest.

Additionally, there are many social justice issues. Our most vulnerable citizens have the least resources to deal with the impact of rising sea level (and they are also the ones who will suffer most from climate change). Public policy response and planning needs to take into account the differing levels of resources people have to deal with the problem.

Name: [redacted]

Address: [redacted]

This survey is also available online at:
https://www.surveymonkey.com/s/sealeveladaptationcomments
Please place this form in the comment box, email to DNREC_DCP_PublicComment@state.de.us, or Mail to: Delaware Coastal Programs, 5 East Reed Street, Ste 201, Dover, DE 19901
Comments Due By March 14

[redacted]

Dear Folks at DNREC,

Sea Level rise is such an important issue that I feel compelled to ask you to consider the following points. Thanks for your time and work in considering these points.

Preparing for and adapting to sea-level rise will be expensive, please include funding mechanisms to address these expenses

Please protect our wetlands as they provide a variety of benefits including providing habitat for plants and wildlife, cleaning our water, decreasing the impact of severe storms, reducing flooding by absorbing runoff, and providing educational and recreational opportunities

Sea-level rise will threaten our drinking water and our farmland. Please strengthen existing funding and regulations to protect these important resources

[redacted]

[redacted]

Please do not fall for this hoax. This story has been spreading around the internet, but is backed up by only extremely questionable "science" based upon theoretical models.

You are already wasting too much of my money on this hoax. I'd rather the government take the day off and go to the beach.

Sincerely, [redacted] - Delaware Taxpayer

[redacted]

After reading Just Seconds from the Ocean by William Sargent I became alarmed at the coast situation because Louisiana is my home state and I am very concerned about Plaquemines Parish. I have tried to get people to read this informative book but the title is a little scary. Really, all information we can read and talk about is helpful. Should you want to have William Sargent for a workshop session I will be glad to help. Please, oh, please read this book. It is in the Delaware Public Library System.

Two writers featured in the WAVE periodical that have addressed the beach and sand problems are [1] Roy Harrell, The Surf Report [several articles this past fall and winter] and {2} Michael Morgan The Sussex Journal {January 22, 2013}.

Mr. Harrell speaks from surfing experience about the sand of the beaches and Mr Morgan recently wrote of the 1932 W. W. Mack, Delaware state highway engineer. Mr. Mack learned seven decades ago, that coastal sands will always be shifty.

[redacted]

[redacted]

After attending the Sea Level Rise session at CHHS on Feb.13th I would offer the following comments:

Continue the outreach effort to educate the public of the threat of Sea Level rise. It will take awhile to sink in.

Improve monitoring of inland sites is necessary to show what even usually high tides can do.

Sea level rise is one thing but that coupled with a storm surge is even worst. We need to keep this in mind.

More scientific research is needed and it needs to be published where we all can find it.

Marsh migration is a good approach for wet lands that are in danger.

Eventually (maybe real soon) we need to think about retreating from the coast and taking down buildings that are doomed.

Potential homeowners must be shown how their properties will flood prior to purchase.

thanks

[redacted]

[redacted]

[redacted]

My advice for DNREC: Stop wasting taxpayers' millions spent on coastal 'Beach Replenishment"- that all goes out to sea with the next 'nor-easter. Rehoboth has exaggerated its needs- which are confined to a few blocks at the north end- all its own fault for building too close to the ocean 100 years ago. We did not make that mistake at the south end- with a wise set-back of homes- 100 feet west of the 1930 boardwalk- established by my grandparents, Henry & Mabel Ridgely back in 1910 and before the then Town annexed our ocean-front lands in 1929.....It is too bad your agency has always been weak on coastal "history" and the last century in storms.....

[redacted]

[redacted]

When making plans to address the effects of potential sea level rise on Delaware please keep in mind the negative impacts a rising sea level will have on Delaware's coast line, marshes, flora and fauna, water supply, storm mitigation, farmland and quality of life, things that affect all of the state's residents in some way. And please please offer scenarios for funding these plans.

Thank you,
[redacted]

[redacted]

As the committee considers options for dealing with sea-level rise, it is important to include sufficient funding in short-term budgets to support research into the impact on the Delaware Estuary ecosystems and the impact on the freshwater areas impacted by potential brackish water intrusion. I, also, ask the committee consider appropriate levels of future funding levels for monitoring changes in the ecosystems.

I realize this is not a simple problem from either an economic, political or scientific perspective. We must focus on the impact to manage the impact and not necessarily to control the the changes. That said, it is critical we minimize the impact on the existing wet-lands to provide critical protection from storms and important habitat for support of biodiversity.

Sincerely,

[redacted]

Respect the environment, think before printing.

[redacted]

Please protect our wetlands as they provide a variety of benefits including providing habitat for plants and wildlife, cleaning our water, decreasing the impact of severe storms, reducing flooding by absorbing runoff, and providing educational and recreational opportunities. Please strengthen existing funding and regulations to protect these important resources.

[redacted]

[redacted]

Hi I am attaching some pics of flooding at woodland beach after Sandy. These pictures were taken while driving down the road in my car; the water you see is the roadway. Also some pictures of our devastated public beach. Maybe this will illustrate why I feel so strongly that our beach should be repaired before private beaches in Lewes. Our children in Kent County deserve a sandy area to play in, and families need a free/low cost alternative in today's economy. This area is an easy day trip from wilmington and Philadelphia and the investment in sand would be repaid many times over

[redacted]

[redacted]

Hi Susan
it was a pleasure meeting you Friday.

My comments/questions are about the storm surge in the Inland Bays and how it is being increased by the man-made inlets such as the Indian River Inlet. The original inlet would at times close and move based on storms. Around 1962 the Indian River Inlet was constructed in its current location and the banks which slope outward stabilized. Over time the inlet has deepened to over 100 feet, and with the increase in sea level the channel is wider, because of the outward sloping sides, allowing for a greater amount of water to enter the bays and cause flooding. The increased flooding of the bays will cause the same exact problem that occurred in New York with Sandy, the flooding came from the bays. My point is that part of the problem is man made and are the agencies recognizing it and what are the agencies that created the problem going to do to correct or minimize it?

You mentioned sea walls and beach replenishment to protect the barrier islands from the ocean but what about the inland bays? Have you considered sea gates or temporary dams to stop the storm surge?

I know people are against projects like beach replenishment however the Corp. of Engineers maintains levies across the country on many rivers. One of note is the Mississippi River to protect New Orleans that is and has been below sea level.

Thank you for your time and if you would like to discuss further please contact me. Don't forget the people who live on the back bays.

[redacted]

[redacted]

Susan,

General comments on sea level rise presentation:

- Generally a good presentation
- USACE must be kept in the loop - they will become involved with most river/bay construction things
- DRBC should be kept in ther loop for water quality issues - even though their jurisdiction ends near the canal, they control discharges from the NY reservoirs to keep the salt line away from Phila and Camden NJ
- DGS is a good reliable source of info - relatively non-political. Keep them in mind for current/future survey monuments. (John Talley, retired from DGS, may be a good contact)
- The general problem is Delaware, et al, vs the Atlantic Ocean. The ocean will win. Prepare.
- A low cost pre-step is the change the 100 year flood plain to a 500 year. This should be recalculated periodically to keep the numbers current. This may be a zoning/planning issue. Probably have to be addressed by cities, towns, counties, state, etc. to effect the change
- The sea level rise model should include storm surges as well as the bathtub approach. Storms seem to cause the most damage now. Full moon high tides also are currently an issue along Rt 9, etc.
- Scott Phillips of USGS did a study on salt intrusion into at least the Columbia Aquifer - this was probably in the late '70s or early '80s. Salt intrusion affected the wells at Atlas Point, and probably the Delaware City refinery. Possibly also Artesian Water.

There is probably more. The sheet with 50+ items to be considered for retreat, adapt, etc needs to be refined and condensed into something more coherent - perhaps with some matrices to get a visual handle on the contents. Is this report available in a Word/Open Office format?

Let me know if there is something more I can do.

[redacted]