

**GENERAL ASSEMBLY OF NORTH CAROLINA**  
**SESSION 2009**

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**HOUSE DRH80531-LDz-137D\* (03/09)**

Short Title: NC Climate Change Adaptation Strategy.

(Public)

Sponsors: Representatives Harrison, Underhill, and Wilkins (Primary Sponsors).

Referred to:

A BILL TO BE ENTITLED

AN ACT TO DIRECT THE DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES TO DEVELOP THE NORTH CAROLINA CLIMATE CHANGE ADAPTATION STRATEGY, AS RECOMMENDED BY THE LEGISLATIVE COMMISSION ON GLOBAL CLIMATE CHANGE.

The General Assembly of North Carolina enacts:

**SECTION 1.(a)** The North Carolina Climate Change Adaptation Strategy. – The Department of Environment and Natural Resources shall develop the North Carolina Climate Change Adaptation Strategy, a comprehensive strategy to adapt to the impacts to North Carolina associated with global climate change. The Strategy shall consist of an assessment as provided under Section 2 of this act and a comprehensive plan as provided under Section 3 of this act. The North Carolina Climate Change Adaptation Strategy shall include climate adaptation goals and principles that shall be reflected in the comprehensive plan. The Strategy shall identify a mechanism and process to assess whether any modification to the Strategy is needed based on the latest science or information as it becomes available over time, and, if modification is needed, a process to implement the modification. In developing the Strategy, the Department of Environment and Natural Resources shall seek the participation and cooperation of units of local government, the Department of Transportation, the Department of Crime Control and Public Safety, the Department of Insurance, the Department of Administration, the Department of Agriculture and Consumer Services, the Department of Commerce, the Department of Public Instruction, the Department of Cultural Resources, the North Carolina Wildlife Resources Commission, and any other State agency or commission that might have a role or be affected by global climate change. In developing the Strategy, the Department of Environment and Natural Resources may seek the input of any appropriate federal agency, such as the United States Army Corps of Engineers, the Federal Highway Administration, the Federal Emergency Management Agency, the United States Department of the Interior, the United States Environmental Protection Agency (USEPA), the United States Department of Commerce, the United States Department of Defense, or any other federal agency that might have a role or be affected by global climate change; any university; or any nongovernmental organization.

**SECTION 1.(b)** Coordination With Local Government and Public Outreach. – In developing the Strategy, the Department of Environment and Natural Resources shall seek input from units of local government regarding the development of the Strategy and shall coordinate with units of local government regarding local plans or programs pertaining to climate change. In developing the Strategy, the Department of Environment and Natural



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1 Resources shall seek input from the public and provide public outreach and education to inform  
2 the general public of the impacts to North Carolina associated with global climate change and  
3 the State's strategy for adapting to these impacts.

4 **SECTION 1.(c)** Technical Advisory Committee. – In developing the Strategy, the  
5 Department of Environment and Natural Resources may establish a technical advisory  
6 committee to assist in developing the Strategy. The technical advisory committee shall consist  
7 of technical experts on North Carolina climate change selected from the scientific community  
8 and associated disciplines within the constituent institutions of The University of North  
9 Carolina. The technical advisory committee may also consist of technical experts on North  
10 Carolina climate change selected from units of local government or nongovernmental  
11 organizations.

12 **SECTION 2.** The North Carolina Climate Change Adaptation Assessment. – In  
13 developing the North Carolina Climate Change Adaptation Strategy, the Department of  
14 Environment and Natural Resources first shall conduct an assessment that, based on the best  
15 available science, accomplishes at least all of the following tasks:

- 16 (1) Identifies the projected impacts to North Carolina's ecosystems associated  
17 with global climate change, including at least all of the following potential  
18 impacts:
  - 19 a. Sea level rise.
  - 20 b. More frequent and intense heat waves.
  - 21 c. Increased air and water temperature.
  - 22 d. Increased intensity and frequency of storms.
  - 23 e. Altered rainfall patterns that may result in droughts, floods, and fires.
  - 24 f. Shoreline erosion that may result in land loss and other ecosystem  
25 change.
  - 26 g. Loss of biodiversity.
- 27 (2) Determines the range of projections of the impacts identified under  
28 subdivision (1) of this subsection and the degree of confidence in these  
29 projections.
- 30 (3) Identifies which resources of the State, including land, water, air, and  
31 biodiversity, are threatened by impacts identified under subdivision (1) of  
32 this subsection, giving consideration to at least all of the following  
33 resources:
  - 34 a. The natural resources of the coastal, Piedmont, and mountain regions  
35 of the State.
  - 36 b. Public, residential, commercial, and industrial buildings.
  - 37 c. Transportation and other essential infrastructure.
  - 38 d. Water supplies.
  - 39 e. Commercial activities, including agriculture and forestry.
  - 40 f. Public health.
  - 41 g. Recreational and conservation lands.
- 42 (4) Identifies which of the impacts identified under subdivision (1) of this  
43 subsection should receive the highest priority to be addressed with  
44 adaptation measures based upon the severity or certainty of the impact and  
45 the level of the threat to the public, natural resources, or the State or local  
46 economies.
- 47 (5) Initiates an economic cost and benefit analysis to determine the potential  
48 costs of maintaining the status quo compared with the costs of implementing  
49 the North Carolina Climate Change Adaptation Plan under Section 3 of this  
50 act.

1           **SECTION 3.(a)** The North Carolina Climate Change Adaptation Plan. –  
2 Concurrent with conducting the Assessment under Section 2 of this act, the Department of  
3 Environment and Natural Resources shall develop the North Carolina Climate Change  
4 Adaptation Plan, a comprehensive plan to adapt to the most likely impacts and associated  
5 threats that are identified in the Assessment, for the purpose of maximizing the security of  
6 North Carolina's citizens, natural resources and biodiversity, essential infrastructure, and  
7 economic vitality. The Plan shall provide a strategy that accomplishes at least all of the  
8 following:

- 9           (1) Develops an inventory of existing federal, State, or local programs and plans  
10 that directly or indirectly address adaptation to climate change.
- 11           (2) Identifies needed changes to existing planning tools and identifies new  
12 planning tools that are needed in order to take into account projected impacts  
13 from climate change, including at least all of the following:
  - 14           a. Floodplain mapping.
  - 15           b. Steep slope mapping.
  - 16           c. Basinwide water planning.
  - 17           d. Coastal zone planning.
  - 18           e. Beach and shoreline planning.
  - 19           f. Transportation and other infrastructure planning.
  - 20           g. Planning regarding public health issues, including planning regarding  
21 increased mortality and morbidity from heat waves, additional  
22 disease vectors, and diminished air quality.
  - 23           h. Emergency response and disaster relief planning.
- 24           (3) Identifies needed changes to federal, State, and local policies, programs,  
25 statutes, and administrative rules in order to implement physical or  
26 ecological adaptation measures, stimulate market responses, provide  
27 appropriate incentives, and regulate future activities that may be affected by  
28 global climate change.
- 29           (4) Identifies adaptation measures as short-term, mid-term, and long-term  
30 adaptation measures and establishes a method by which adaptation measures  
31 are to be prioritized.
- 32           (5) Identifies methods to better coordinate and integrate State natural hazard  
33 planning and regulatory programs in the Department of Environment and  
34 Natural Resources and the Department of Crime Control and Public Safety.
- 35           (6) Directs the Department of Environment and Natural Resources or the  
36 Division of Emergency Management of the Department of Crime Control  
37 and Public Safety to integrate post-disaster planning requirements with  
38 hazard mitigation planning requirements into one plan that includes the latest  
39 scientific understanding of sea level rise, erosion, and other coastal hazards  
40 and environmental impacts of global climate change.

41           **SECTION 3.(b)** Considerations in Developing or Modifying the Plan. – When  
42 developing or modifying the Plan, all of the following policy approaches to adaptation may be  
43 considered:

- 44           (1) Developing plans that address how local governments in the coastal plain  
45 can adapt to potential changes in property tax revenue as sea-level increases  
46 lead to land loss.
- 47           (2) Directing the Coastal Resources Commission to increase protection of  
48 coastal wetlands and their ability to migrate inland by the Commission  
49 prohibiting new bulkheads and hardened structures in certain areas of  
50 environmental concern, as designated by the Coastal Resources Commission  
51 under G.S. 113A-113.

- 1 (3) Utilizing the consistency provisions of the Coastal Area Management Act  
2 (CAMA), Article 7 of Chapter 113A of the General Statutes, and the federal  
3 Coastal Zone Management Act, 16 U.S.C. § 1451, et seq., to help resolve  
4 conflicts between existing State and federal policies and programs.
- 5 (4) Requiring the Division of Coastal Management of the Department of  
6 Environment and Natural Resources to report on the loss of coastal wetlands  
7 due to estuarine shoreline hardening and other uses to the Environmental  
8 Review Commission and any future legislative commission that directly and  
9 primarily addresses issues concerning global climate change.
- 10 (5) Requiring an applicant for a permit under CAMA to mitigate the applicant's  
11 impact on wetlands that may result from any hardening of the estuarine  
12 shoreline outside of areas of environmental concern.
- 13 (6) Authorizing coastal management grants to units of local government to be  
14 used for planning for, and adapting to, sea level rise.
- 15 (7) Making maps of sea level rise available on the Internet for the use of units of  
16 local government, realtors, conservation organizations, and the general  
17 public.
- 18 (8) In order to protect the public recreational beaches, identifying options for  
19 responding to shore zones that are most vulnerable to storms and sea level  
20 rise and develop options that provide for future changes and plans for the  
21 short-term and long-term use of public recreational beaches.
- 22 (9) Promoting the use of any of the following living shoreline management  
23 methods so that estuarine shorelines are able to evolve and migrate in  
24 response to rising sea level:
  - 25 a. Restoring, enhancing, protecting, and mitigating existing wetland or  
26 riparian habitat and vegetation.
  - 27 b. Constructing and managing new wetlands in upslope regions.
- 28 (10) Developing incentives and regulatory changes to encourage the use of the  
29 Climate Ready Estuaries program, a program developed by the USEPA to  
30 train coastal managers to implement economically viable and  
31 environmentally sound procedures for portions of the estuaries and barrier  
32 islands that are particularly vulnerable to climate variability and change;  
33 implement adaptation strategies; share information, and engage and educate  
34 the stakeholders and other coastal managers.
- 35 (11) Requesting the Albemarle. – Pamlico National Estuary Program, a  
36 cooperative program jointly sponsored by the Department of Environment  
37 and Natural Resources and the USEPA in cooperation with the Virginia  
38 Department on Conservation and Recreation, to review the USEPA's  
39 Climate Ready Estuaries program and plan for and adapt to climate change  
40 and sea level rise.
- 41 (12) Determining any funding needs related to adaptation and mitigation and  
42 considering possible funding resources to address such needs.
- 43 (13) Pursuing federal funding for a southeast regional adaptation study, a study to  
44 assist in the development of relocation and removal strategies that uses the  
45 existing authority of the United States Army Corps of Engineers.
- 46 (14) Developing plans for geo-zoning of the barrier islands and estuarine shore  
47 zone environments within coastal North Carolina.
- 48 (15) Identifying the reasons for and against adopting either a strategy of in situ  
49 management of adaptation measures as opposed to the strategy of retreating  
50 from the high hazard ocean and inlet shorelines and estuarine shorelines.

- 1 (16) Determining possible cost-sharing incentives with landowners for the costs  
2 of implementing ecologically beneficial adaptive strategies for managing  
3 estuarine shorelines in response to rises in sea level.
- 4 (17) Identifying new economic opportunities within the eastern North Carolina  
5 coastal system, the Piedmont, and the mountain regions of the State based  
6 upon the impacts identified under subsection (1) of Section 2 of this act and  
7 the resulting adaptations to these impacts.
- 8 (18) Directing the Coastal Resources Commission to delineate economically  
9 viable and environmentally sound ways to address various scenarios  
10 regarding potential sea level rise in each the short term, the midterm, and the  
11 long term, based on the information in its 2010 Science Panel report.
- 12 (19) Identifying mechanisms for purchasing land or conservation easements on  
13 portions of coastal and inlet hazard zones, as well as other portions of the  
14 low-lying coastal zone, that are identified as at risk.
- 15 (20) Developing and implementing a method of tracking ecosystem changes  
16 resulting from climatic shifts, with specific focus on those resources that  
17 have direct economic priorities, such as tourism, agriculture, silviculture,  
18 and marine fisheries.
- 19 (21) Evaluating the reasons for and against a requirement that sellers of coastal  
20 properties disclose potential hazards to buyers and a requirement that this  
21 disclosure accompany all real estate transfers of properties within coastal  
22 counties that either are directly on ocean, inlet, or estuarine shoreline  
23 frontage or are located within a 100-year floodplain.
- 24 (22) Evaluating the policy proposals, findings, and recommendations that resulted  
25 from the Beach Management Summit, held in 2009 in Beaufort, North  
26 Carolina, hosted by the North Carolina Coastal Federation and the UNC  
27 Center for the Study of Natural Hazards and Disasters, as these pertain to  
28 oceanfront communities adapting to climate change.

29 **SECTION 4.** Continued Coordination With Local Government and Public  
30 Outreach. – Once the North Carolina Climate Change Adaptation Strategy is developed  
31 initially under Section 1 through Section 3 of this act, the Department of Environment and  
32 Natural Resources shall continue to coordinate with units of local government regarding the  
33 implementation of the Strategy and shall continue to provide public outreach and education to  
34 inform the general public of the impacts to North Carolina associated with global climate  
35 change and the State's strategy for adapting to these impacts.

36 **SECTION 5.** Database Framework. – The Department of Environment and Natural  
37 Resources, the universities within The University of North Carolina, and the technical advisory  
38 committee, if a technical advisory committee is established under Section 1(b) of this act,  
39 jointly shall develop a framework for a database to provide to the general public and others  
40 information related to making economically and environmentally prudent adaptation decisions.  
41 This database may include maps, surveys, inventories, and other relevant, useful information.  
42 The Department of Environment and Natural Resources and the technical advisory committee,  
43 if a technical advisory committee is established, may recommend improving the current  
44 permanent monitoring stations and may install new permanent monitoring stations within the  
45 North Carolina coastal zone, as required to develop the database under this section.

46 **SECTION 6.** Report Requirement. – Beginning no later than October 1, 2010, the  
47 Department of Environment and Natural Resources shall submit quarterly progress reports to  
48 the Environmental Review Commission and to any future legislative commission that directly  
49 and primarily addresses issues concerning global climate. No later than January 1, 2013, the  
50 Department of Environment and Natural Resources shall submit a final report that shall include  
51 the North Carolina Climate Change Adaptation Strategy and any recommendations or

1 legislative proposals to the Environmental Review Commission and to any future legislative  
2 commission that directly and primarily addresses issues concerning global climate change.

3           **SECTION 7.** Appropriation. – There is appropriated from the General Fund to the  
4 Department of Environment and Natural Resources the sum of fifty thousand dollars (\$50,000)  
5 for the 2010-2011 fiscal year to implement the provisions of this act.

6           **SECTION 8.** Effective Date. – This act becomes effective July 1, 2010.