

Climate Change Scenario Planning

Interagency Climate Change Scenario Planning Pilot Project on Cape Cod

Location: Cape Cod, Massachusetts

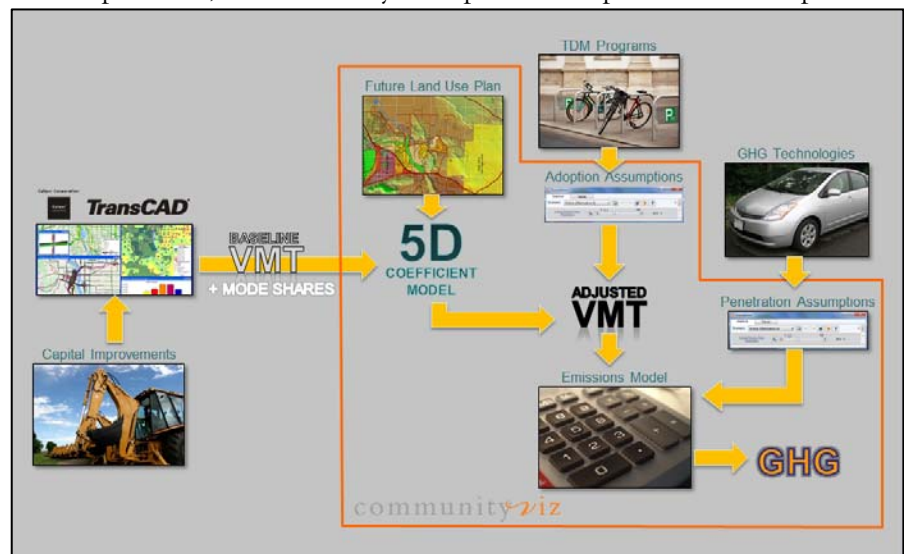
Partners: PlaceMatters; Placeways; University of Colorado at Denver; USDOT Volpe Center; Cape Cod Commission; and the US Interagency Climate Change Working Group, including the Federal Highway Administration (FHWA); the National Park Services (NPS); the Federal Transit Administration (FTA); the Fish and Wildlife Services (FWS); the National Oceanic and Atmospheric Administration (NOAA); the Environmental Protection Agency (EPA); the Federal Emergency Management Administration (FEMA); and the Department of Defense.

Context: Cape Cod, Massachusetts is a popular destination for travelers and new residents alike seeking the natural scenic beauty and clean coastline the area has to offer. Local and regional planning agencies such as the Cape Cod Commission work to protect the area's unique qualities, pristine environment, and natural resources. In 2010, an interagency work group of federal agencies, working through the USDOT's Volpe Center, selected the Cape as the pilot site to test a new approach to planning. The goal was to look across traditional boundaries such as transportation, land use, and environmental planning to understand their interconnected effects. In particular, the emphasis was on reducing greenhouse gas emissions from transportation and estimating the effects of climate change on land use and transportation infrastructure.

Project Description: The Volpe Center partnered with a multidisciplinary team that included PlaceMatters, Placeways, and the University of Colorado to create a pair of scenario planning workshops built around CommunityViz[®]. The work began with the assembly of a broad array of data about the area, including existing transportation infrastructure, land cover and land use, sea level, environmentally sensitive areas, hazard vulnerabilities, and transportation data from TransCAD transportation modeling software.





In addition to modeling present-day conditions, the team created 4 future scenarios using CommunityViz. The Trend scenario used population growth forecasts and existing land use and transportation plans to paint a portrait of the Cape 20 years into the future. Alternative scenarios looked at combinations of development, transportation system improvements, and transportation programs varying from extremely dispersed with little change to transportation, to extremely compact with planned and expanded transportation improvements.

The team developed an array of CommunityViz indicators for measuring the range of impacts that each scenario would produce. The primary area of focus was the specific effects of development and transportation alternatives on vehicle miles traveled (VMT) and greenhouse gases. Other categories enumerated indicators for water quality, regional accessibility, hazard vulnerability, preservation of natural/existing ecosystems,



and historic character. Each kind of indicator used appropriate impact models derived from a range of scientific and empirical studies as well as more straightforward geospatial measurements. One key model was a “5D” estimate of likely VMT reductions due to changes in development density, street and sidewalk design, diversity of uses, access to destinations, and distance to transit.

The scenario planning workshops were designed to bring together experts and stakeholders representing a wide range of local and regional perspectives, different planning domains, and differing levels of expertise. After the stage was set with educational presentations on the current state and future prospects for Cape Cod, participants divided into small groups to work on different scenarios. Equipped with the starting CommunityViz scenarios the technical team had built beforehand, the groups used interactive editing and sketching tools to explore potential variations. The set up included a custom infrared pen system that allowed participants to “draw” on a projected image of the CommunityViz map and have their data entered directly into the computer. The Transit Alternatives

		Development Intensity	
		Business As Usual	Extreme (Compact Development)
Transportation Choices	Planned Improvements		
	Transit/Pedestrian Focus		

exercise looked into possible changes to the planned transit routes in Cape Cod. Another interactive exercise worked on deciding where to allocate new growth by placing virtual housing and jobs on the computerized maps. After participants sketched new transit stops on the map or added new growth, the CommunityViz model gave them dynamically updated information on important results like population served by transit, new growth in vulnerable areas and changes to GHG emissions.



Technology and Tools: CommunityViz

Scenario 360™ including Scenario Sketch Tools, custom pen system using Smoothboard 2 and infrared pens, TransCAD, and ArcGIS with the Network Analyst extension.

Outcomes: The workshops were held in November, 2010. Participants responded very favorably, saying the technology gave them new insights about factors they had not previously considered. A complete report, including the group’s recommendations for a “preferred scenario,” are available at <http://www.volpe.dot.gov/publiclands/projects/interagencyproject.html>.

KEY LINKS
CommunityViz http://www.placeways.com/communityviz
Placeways LLC http:// placeways.com
Cape Cod Commission http://www.capecodcommission.org
PlaceMatters http://www.placematters.org
University of Colorado at Denver http://www.ucdenver.edu
USDOT Volpe Center http://www.volpe.dot.gov