

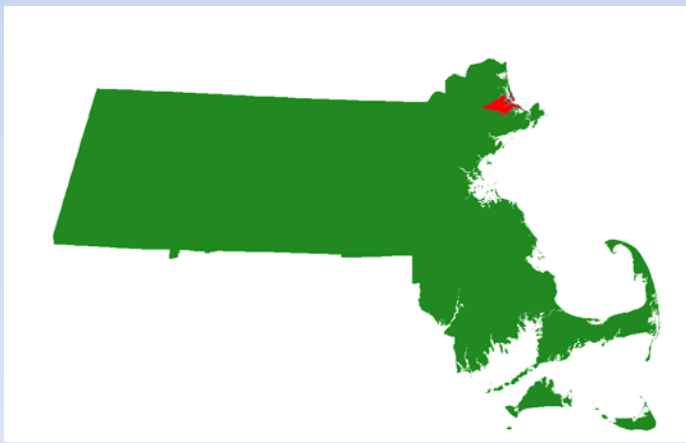
# Sea Level Rise and Impacts to the town of Ipswich, MA



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# Ipswich, MA

- Originally settled in 1633.
- Total population(2000 census)- 12987
- Total area 32<sup>2</sup> sq. miles
- Main economy of Ipswich is based around tourism.
- Also shell fishing, specifically soft shell clams.
  - “Best in the world”



# Present Sea Level



# Infrastructure & Land Uses of Ipswich

- 5 Schools
- 1 Police Station
- 1 Fire Station
- MBTA Commuter train
- Town hall





# 3 Meter Rise in Sea Level Land Use



# 3 Meter Sea Level Rise Infastucture



# Damages at 3 Meters

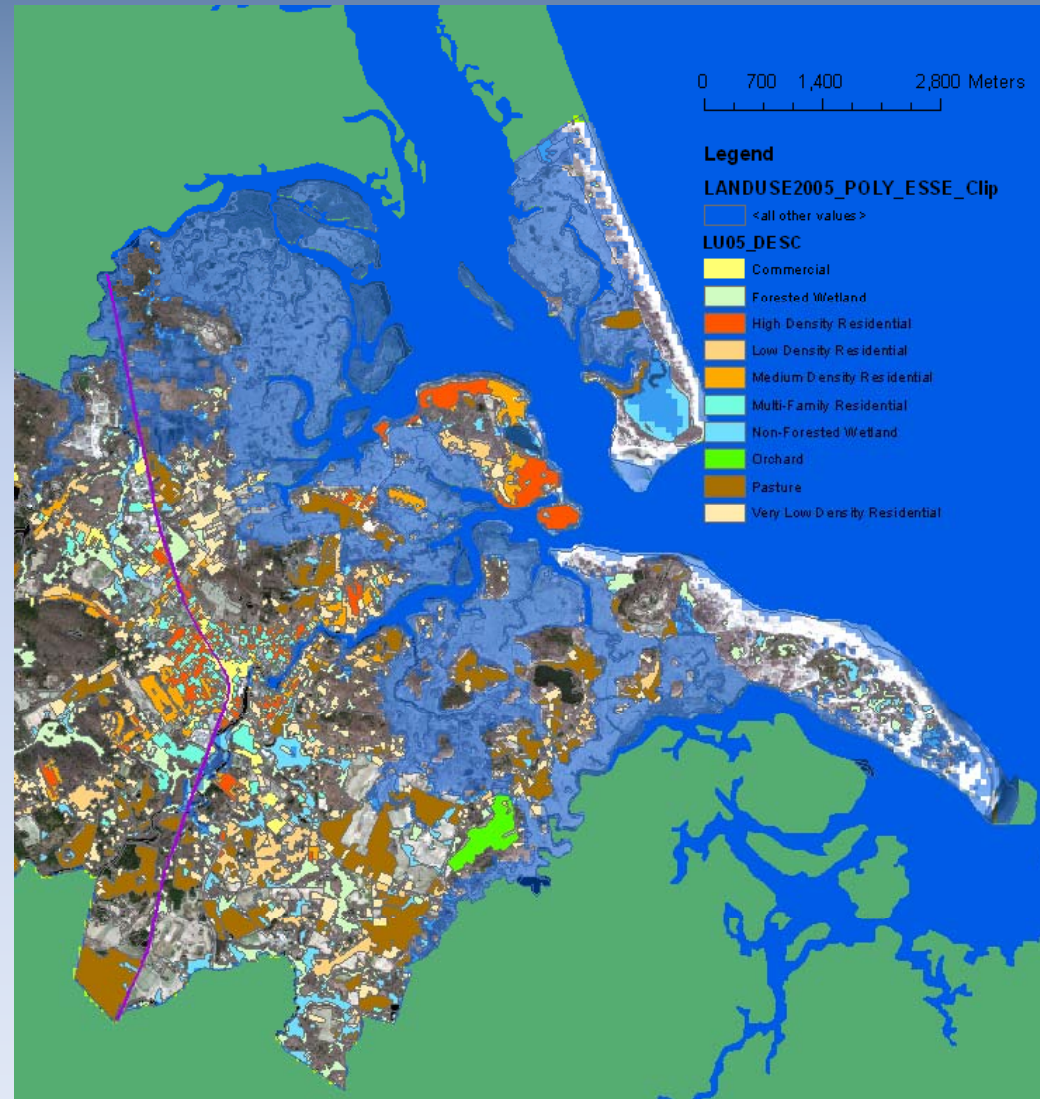
- Flooding of few low lying homes around the harbor.
- Flood of a small portion of South Main street.
- Flooding of northern portion of MBTA commuter rail.
- Probable water damage to Ipswich middle school and town hall.
- Flooding of several access roads leading to residential areas.
- Inundation is limited to eastern half of Ipswich, and mostly confined within the salt water marshes that line the coast.
- Total Area of flood: 22%=7.3 sq miles





# 3.5 meters of Sea Level Rise

## Land use





# 3.5 Meters Sea Level Rise Infrastructure

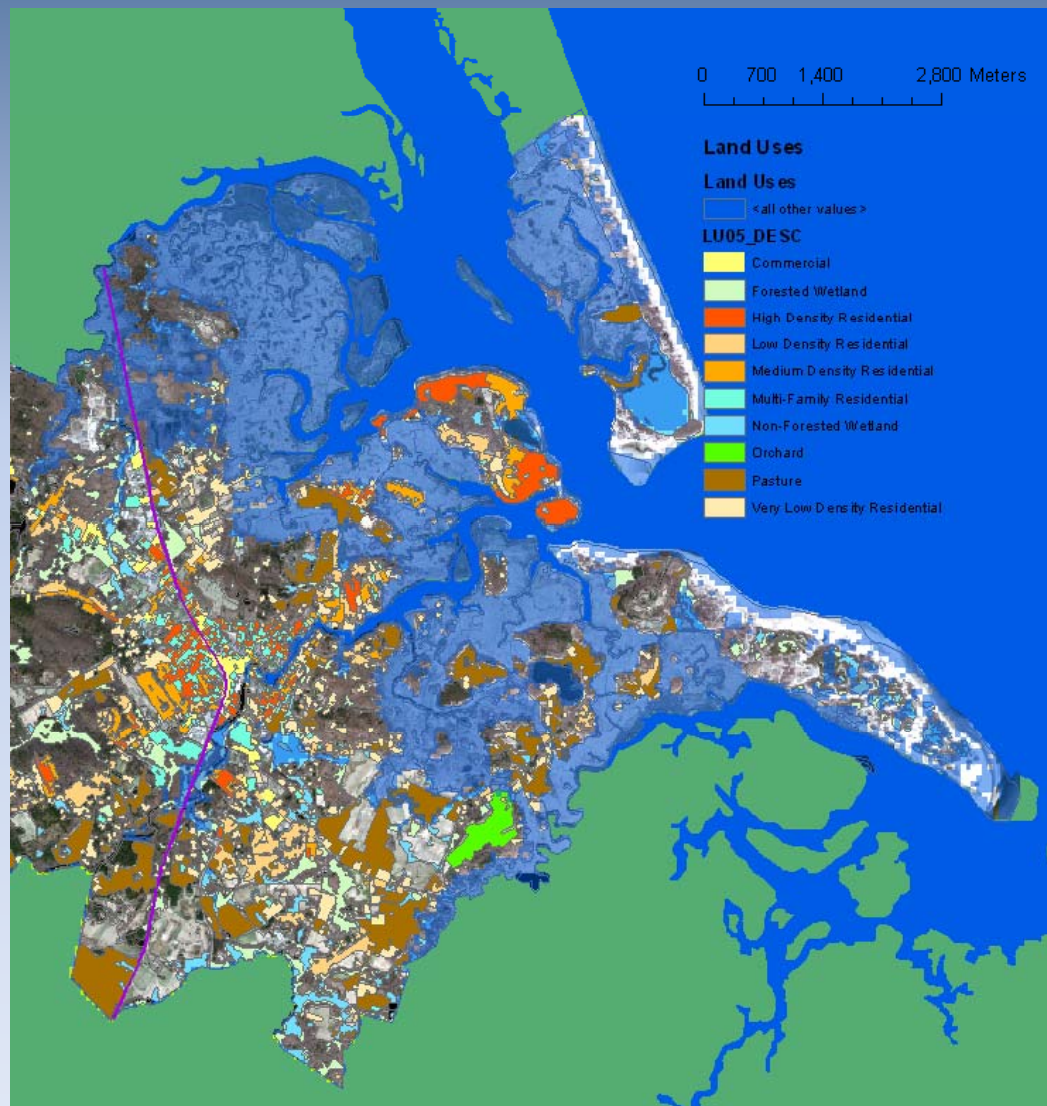


# Damages at 3.5 Meters

- Increased flooding in residential areas around harbor.
- Majority of homes inundated are around the Ipswich river.
- Increased flooding of access roads residential areas around the harbor.
- Portion of southern section of MBTA commuter rail now flooded.
- Increased probability of water damage to Ipswich middle school and town hall.
- Flooding still Confined to mainly salt marshes which buffer the majority of the town from the harbor.
- Total flooded area: 25%= 8 sq miles



# 4 Meter Sea Level Rise Land Uses





# 4 Meters Sea Level Rise Infrastructure





# Damages at 4 Meters

- Similar to previous two scenarios, increased flooding of area around the harbor, and along Ipswich river.
- Increased probability of water damage of town hall and Ipswich middle school.
- Increased flooding of Ipswich river, although lack of resolution in data does not display flooding around some of the lower lying areas of river, inundation of several shops and homes seems likely.
- Majority of flooding still contained to saltwater marshes.
- Cranes beach and Plum Island will be facing harsh beach erosion in the case of a storm of high seas.
- Total area: 28%=8.96 sq Miles



# Conclusion

- The town of Ipswich is suited well for the projected amounts of sea level rise.
- Main infrastructure of town is untouched with regards to MBTA rail, Town hall, Ipswich middle school, and access roads to residential areas closer to the harbor.
- Emergency response centers remain untouched.
- Very few house are threatened by projected rise of sea level.
- Serious impact of the local Shell fishing industry.
- Ipswich may consider a levy system around low lying areas around Ipswich river to contain the rising water.
- Also the town may consider raising and reinforcing those access roads that will be flooded under these scenarios.



[Image From  
www.floodefence.com/](http://www.floodefence.com/)

# Reference

- Town of Ipswich official website.  
<http://www.town.ipswich.ma.us/>
- Mass GIS. <http://www.mass.gov/mgis/>