

Neighborhood scale quantification of ecosystem goods and services.

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U.S. EPA, Gulf Ecology Division
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Ecosystem Goods and Services

- Humans live in, influence, pressure, and benefit from ecosystems in many ways.
- We applied 3 ecosystem process rates and 4 stock estimates to biophysical features on the landscape using various spatial datasets (Land Use, Vegetation, Parcel).
 - Viewshed attributes and accessibility of greenspace.
 - Carbon sequestration, nitrogen removal, atmospheric pollution removal, and shading.
- Rates and Stocks then valued
 - Potential vs. Realized = External vs. Internal Beneficiaries
 - Per year vs. Point in time = Future vs. Past Production



How beneficial is this development pattern compared to traditional?

“FishHawk Ranch, an award-winning, **master-planned community** in southeast Hillsborough County, has become a truly established **hometown** with a spirit all its own.

New traditions are taking hold in each of the neighborhoods and throughout the community as residents come together at a myriad of social events and **recreational activities**.

FishHawk Ranch has received national and statewide environmental and planning awards for its efforts to **save and preserve trees** during design, development and construction.

These honors include a Grand Award from the National Arbor Day Foundation as the **nation's top master-planned community**, a Community Design Award of Excellence in Environmental Projects from the Hillsborough County Planning Commission, and a **Future of the Region Development Award** from the Tampa Bay Regional Planning Council.

One-third of the community will remain **conservation and open space**. Moreover, the community is bordered by 2,000 acres of county-owned nature preserve.”

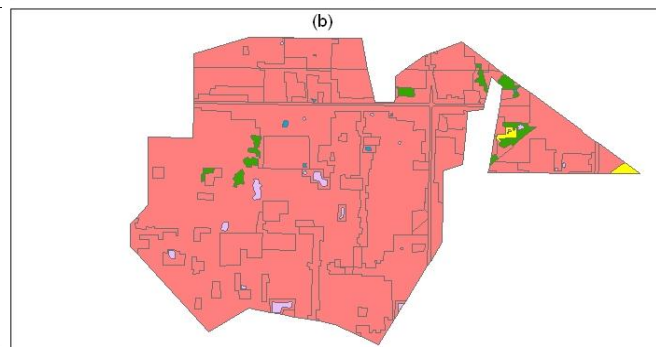
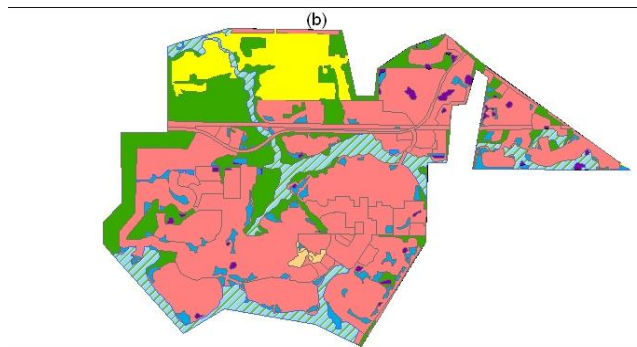
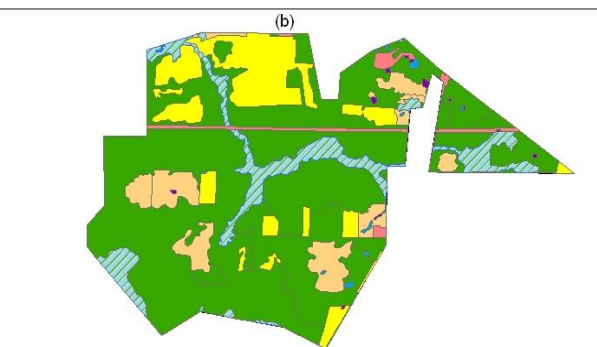
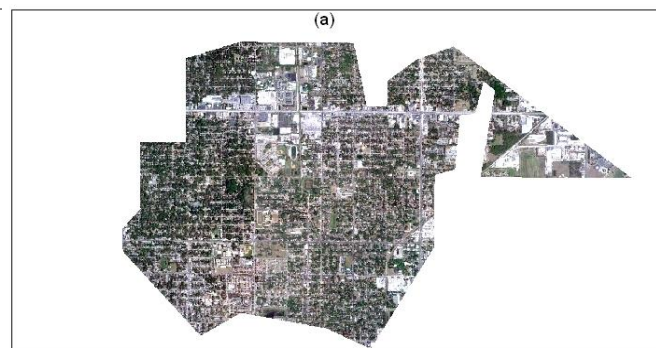
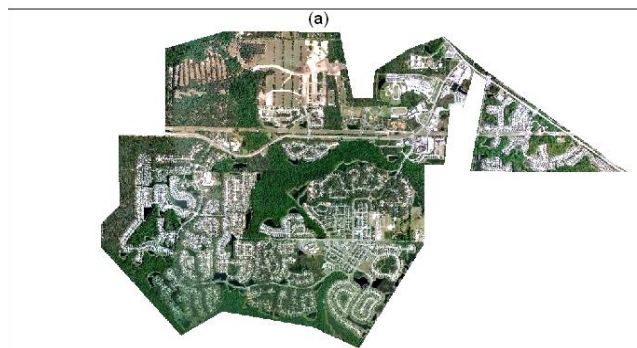
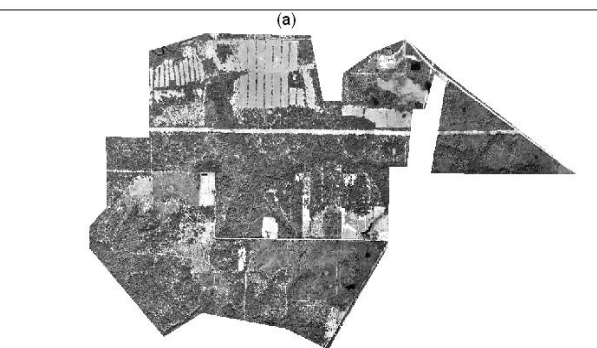
PrivateCommunities.com

Three Scenarios

1990, Pasture and Range

2009, Green Dev.

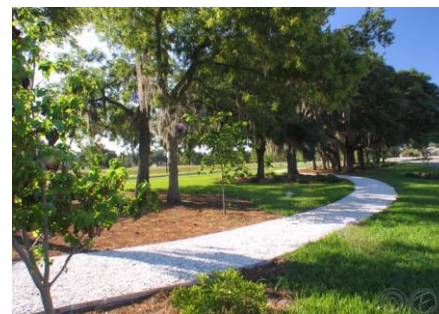
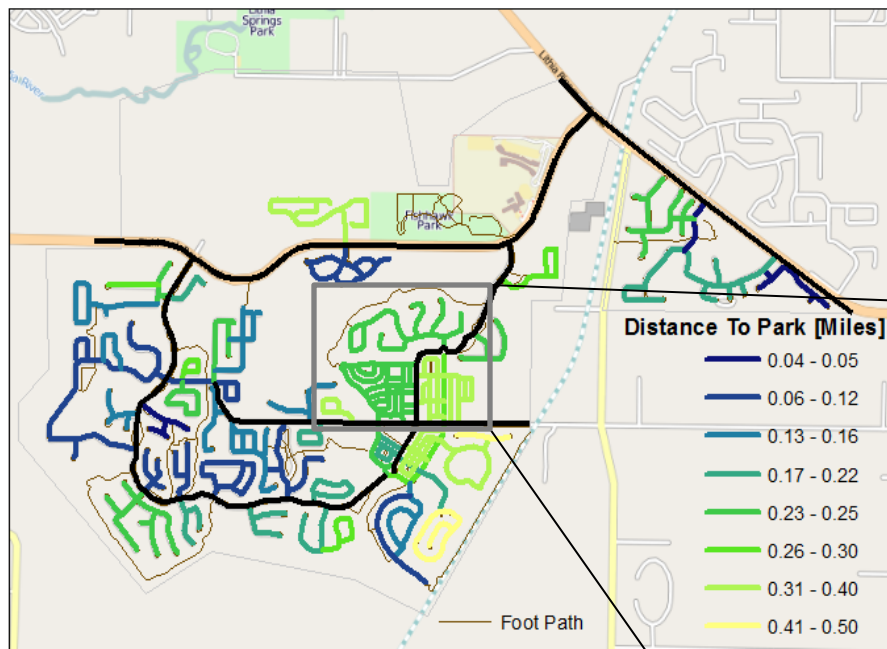
Alternative*, Traditional Dev.



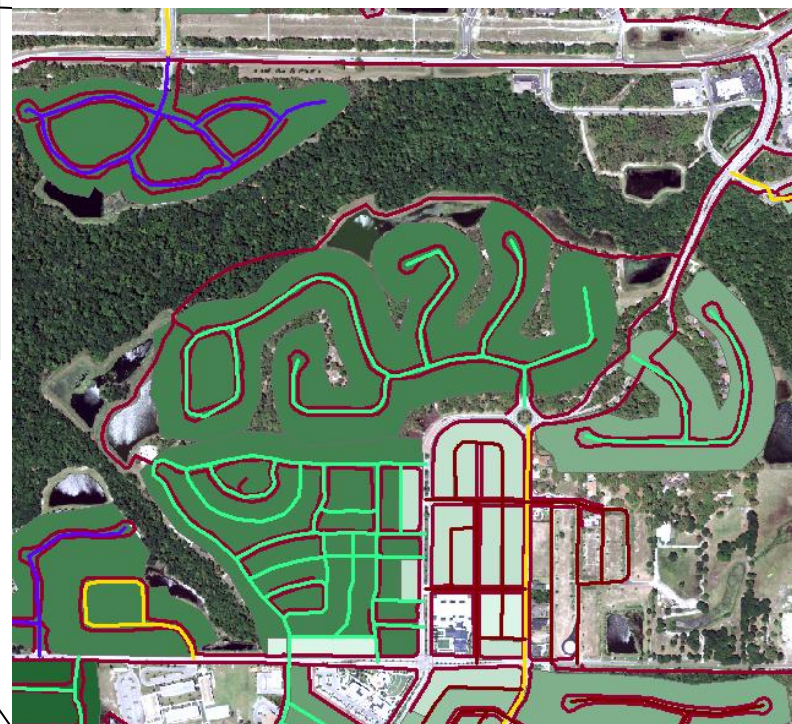
Florida Land Use Cover Classification System Maps

* Alternative development pattern taken from East Tampa

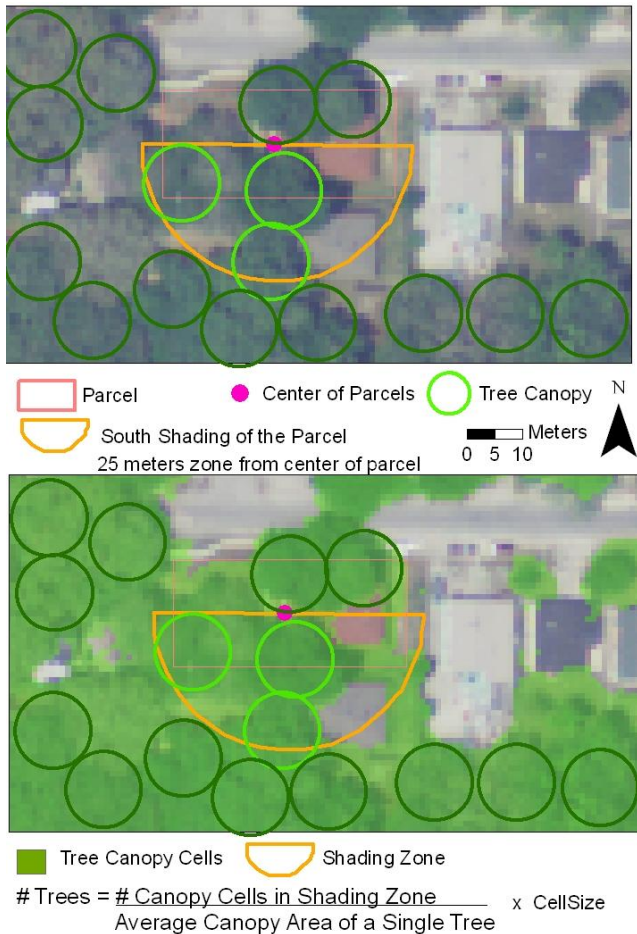
Value of Greenspace



Function of increase in home values assigned to areas of greenspace weighted by distance to access point



Value of Residential Trees

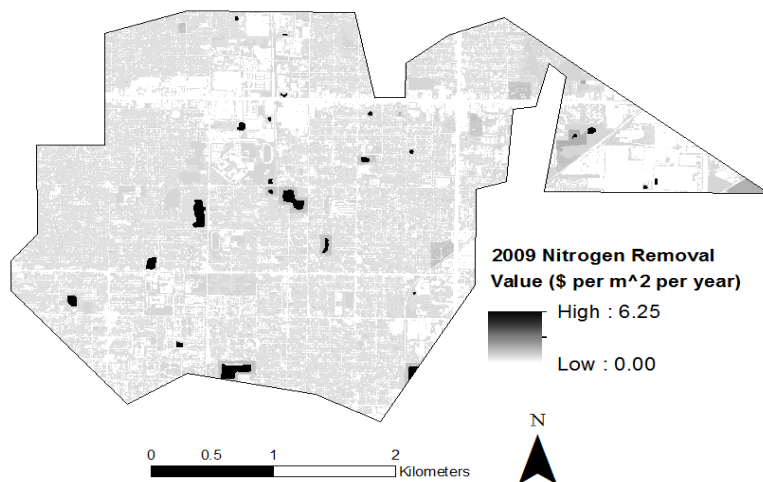
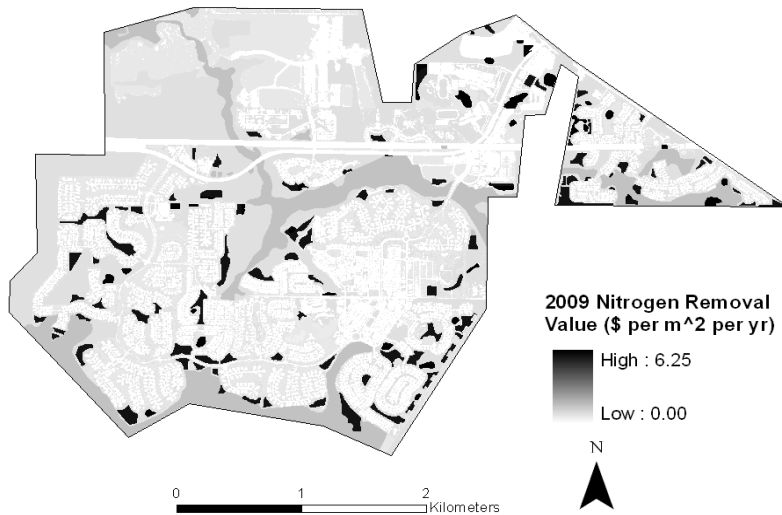


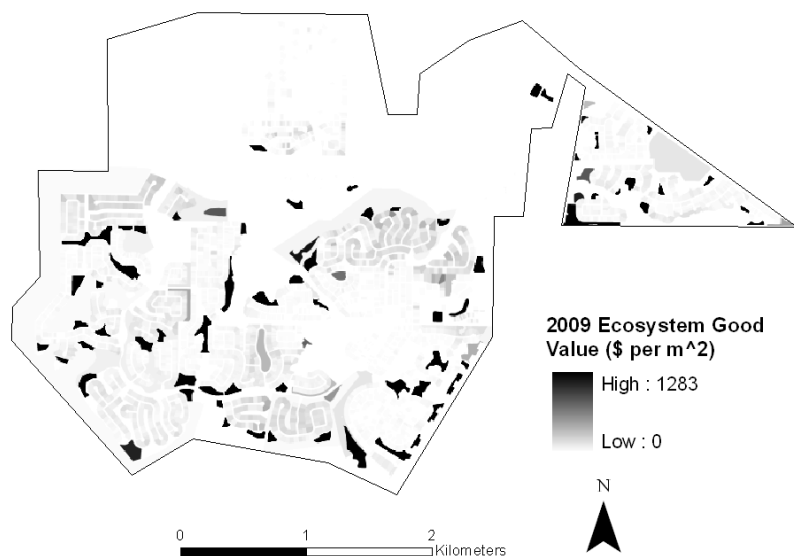
Shading is function of number, location, and size of trees combined with electricity use costs

Aesthetic value is a function of increased property values due trees on property

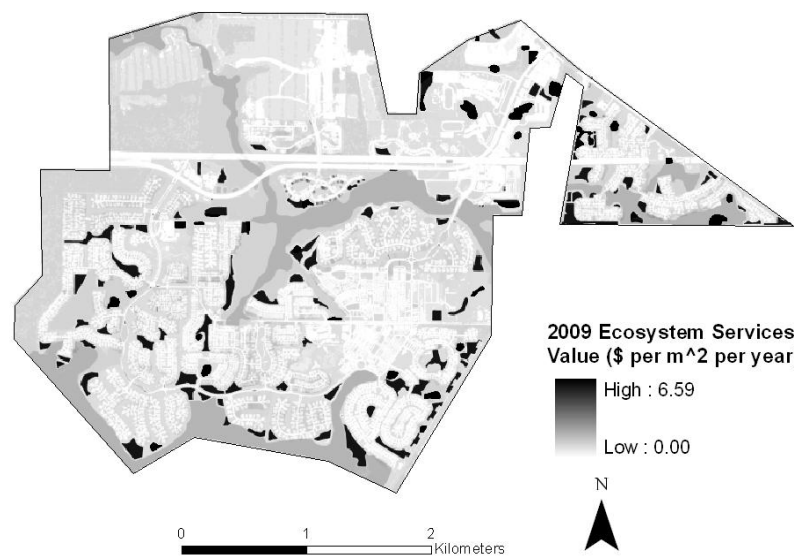
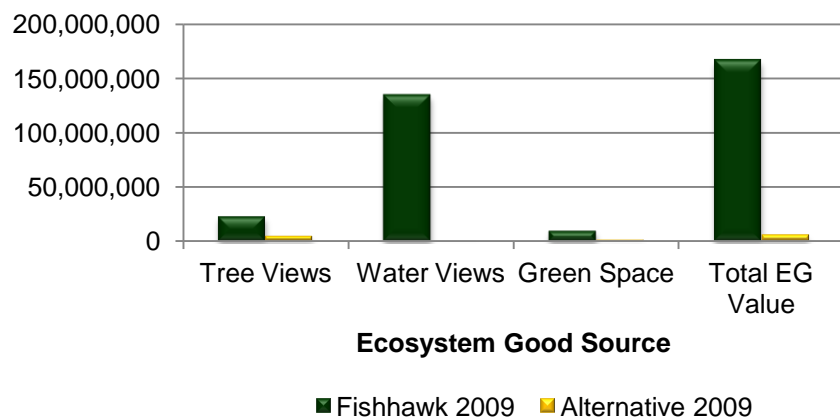
Water Quality Regulation

- Nitrogen removal is the most valuable of the 4 ecosystem services we assessed.
- Beneficiaries are downstream.

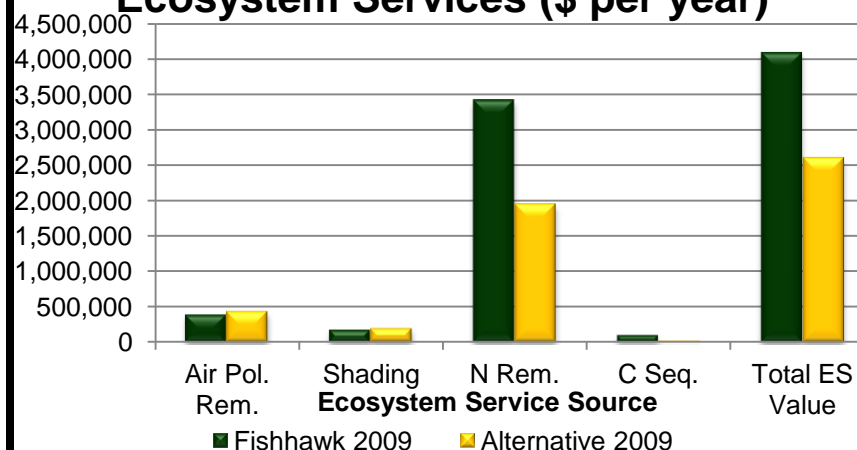




Ecosystem Goods (\$)



Ecosystem Services (\$ per year)



Ancillary Benefits

- Two landscapes that provide both ecosystem goods and ecosystem services
 - Water features – Aesthetics, nitrogen and carbon sequestration
 - Vegetated areas – Access to greenspace, aesthetics, air pollution removal, and carbon and nitrogen sequestration