



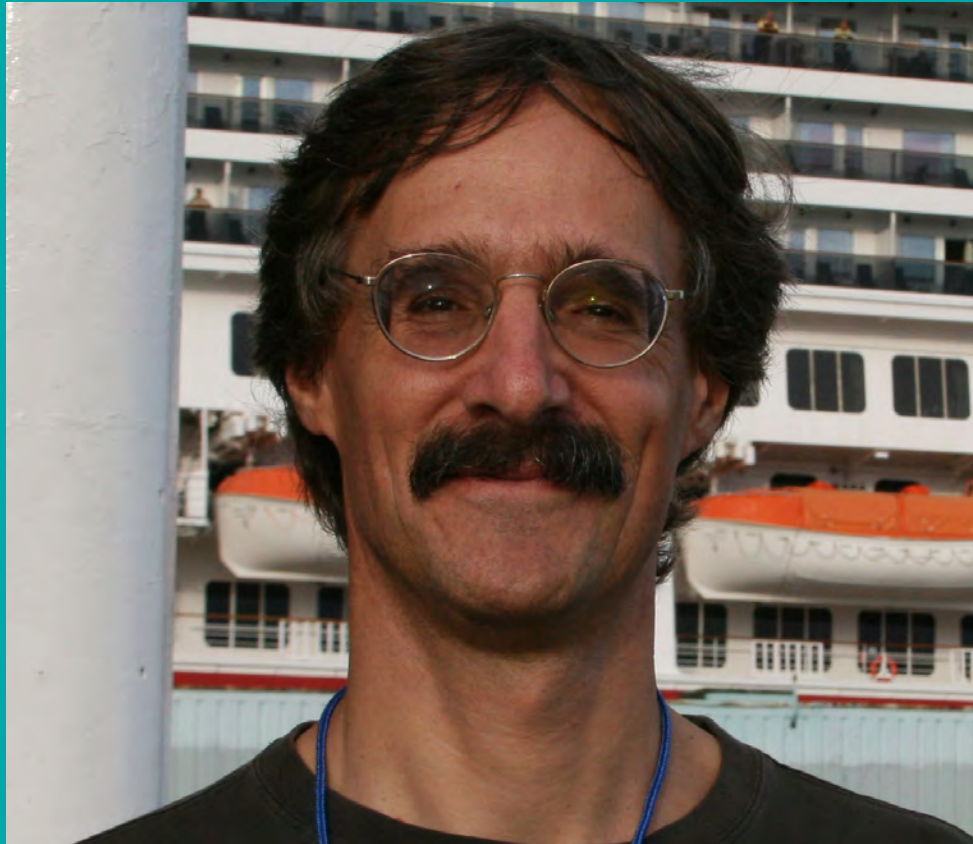
City of Keene, NH

Towards a Climate Resilient Community

NEMO U7
October 30, 2010

Rhett Lamb, Planning Director
City of Keene, NH





Keene, New Hampshire **Keene, NH**

Who are we

What have we done

Mitigation

Adaptation

Making it stick (Alignment)

Observations

Keene, NH

- Population of 25,000
- Mayor & City Council
- Climate Initiative since 1999



Why should Local Gov. Respond?

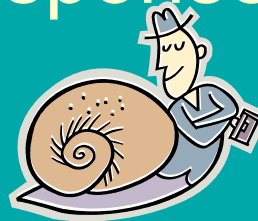
- Best Economic Interest



- Local government knows details



- Time lag in response from higher levels of government



- Local government is positioned to meet needs



Keene, NH

- Partnered with ICLEI in 1999
- Conducted GHG Emissions Inventory
- Adopted Climate Action Plan (CAP) 2004
- Adopted Adaptation Plan (CRC) 2007
- Update GHG Emissions Inventory
- Adopted Comprehensive Master Plan 2010

Keene's GHG Reduction Target

- **2 reduction targets for 2015**
 - **Community = 10% below 1995 levels**
 - **Municipal = 20% below 1995 levels**
- **To reach the community goal, reduce approximately 73,000 tons of CO₂**
- **To reach the municipal goal, reduce approximately 1,300 tons of CO₂**

Reduction Measures to Date

- Biodiesel throughout city fleet (77 vehicles in total)
- Hybrid vehicle program
- Geothermal system at DPW
- Methane to energy system
- Micro Hydro installation at Water Plant
- Internal municipal recycling program

Reduction Measures to Date

- LED for traffic signals & street lights
- Police on Bicycles
- Environmentally Preferable Purchasing
- Offset our Christmas Tree Lighting
- Recycling Outreach and Backyard Composting Program
- Energy upgrades to VFD motors

Reduction Measures to Date

- Tax breaks for residential wood, wind and solar
- Woodstove Changeout
- Built three roundabouts
- Anti-idling campaign
- Carbon Challenge with Portsmouth NH
- Sponsored Middle School solar car race
- “Climate Change the Musical”

Reduction Measure Savings...

- LED Replacements - \$3,854 annually
- Police on Bicycles - \$805 annually
- Internal Recycling Program - \$3,140 annually
- Methane Recovery System - \$ 55,000 annually
(estimated)

In the Pipeline...

- **Exploration of wind generation and more hydro power**
- **Partner in local bio-diesel production facility**
- **Urban forestry program (carbon sequestration and maintenance)**
- **Energy efficiency upgrades to through an ESCO**

In the Pipeline...

- **Building code changes for energy efficiency**
- **Incentives for green buildings**
- **Expand 10% Challenge Program**
- **Changes to land use regulations to better incorporate smart growth & sustainability principles**
- **Neighborhood Home Weatherization**

Keene's CRC Plan



- ICLEI partnership
- Complement to CCP
- Vulnerability assessment
- Create goals and ways to achieve those goals

Climate Impacts

- Floods
- Changes in snowfall
- Changes in plant and animal species
- Hotter days
- Air Quality Impacts
- More dynamic weather pattern



Keene 2005

2. Plan- ning Area	3. Current and Expected Stresses to Systems in This Planning Area	7. Projected Climate Change Impacts to Systems in This Planning Area	VULNERABILITY ASSESSMENT		
			8. Degree of Sensitivity of Systems in This Planning Area (see Table 8.1)	10&11. Adaptive Capacity of Systems in This Planning Area (see Table 8.2)	12. Vulnerability of Systems in this Planning Area
Water supply	Managing summer drought <i>(current and expected)</i>	More drought, summer water stress likely due to lower winter snowpack and warmer, drier summers. Population growth will compound this problem.	High – water supply is very sensitive to changes in snowpack.	Low – numerous regulatory constraints on reallocating water, options for expanding supply limited, summer demand already greater than supply.	High
Stormwa- ter man- agement	Combined sewer overflows (CSOs) during heavy rainstorms <i>(current and expected)</i>	More localized flooding, water quality problems possible if precipitation becomes more intense, frequent.	High – CSO events are sensitive to changes in the intensity and frequency of rain events.	Medium – can upgrade the system but costly; some upgrades already underway.	Medium
Road operations and main- tenance	Pavement buckling on asphalt roads during extreme heat events	More required asphalt maintenance likely.	High – pavement buckling an existing problem on many roads.	Medium – can replace asphalt more frequently but costly; dependent on industry-wide changes in asphalt for improved asphalt mixes.	Medium

Table 8.3 – Vulnerability assessment for systems associated with sample planning areas of water supply, stormwater management, and road operations and maintenance. This table provides an example of a qualitative vulnerability assessment for systems in the sample planning areas of water supply, stormwater management, and road operations and maintenance.

Vulnerabilities & Opportunities

Three Sectors

- The Built Environment
- The Natural Environment
- The Social environment

The Built Environment

- Opportunities:
 - Buildings and Development
 - Transportation Infrastructure
 - Stormwater Systems
 - Energy Systems

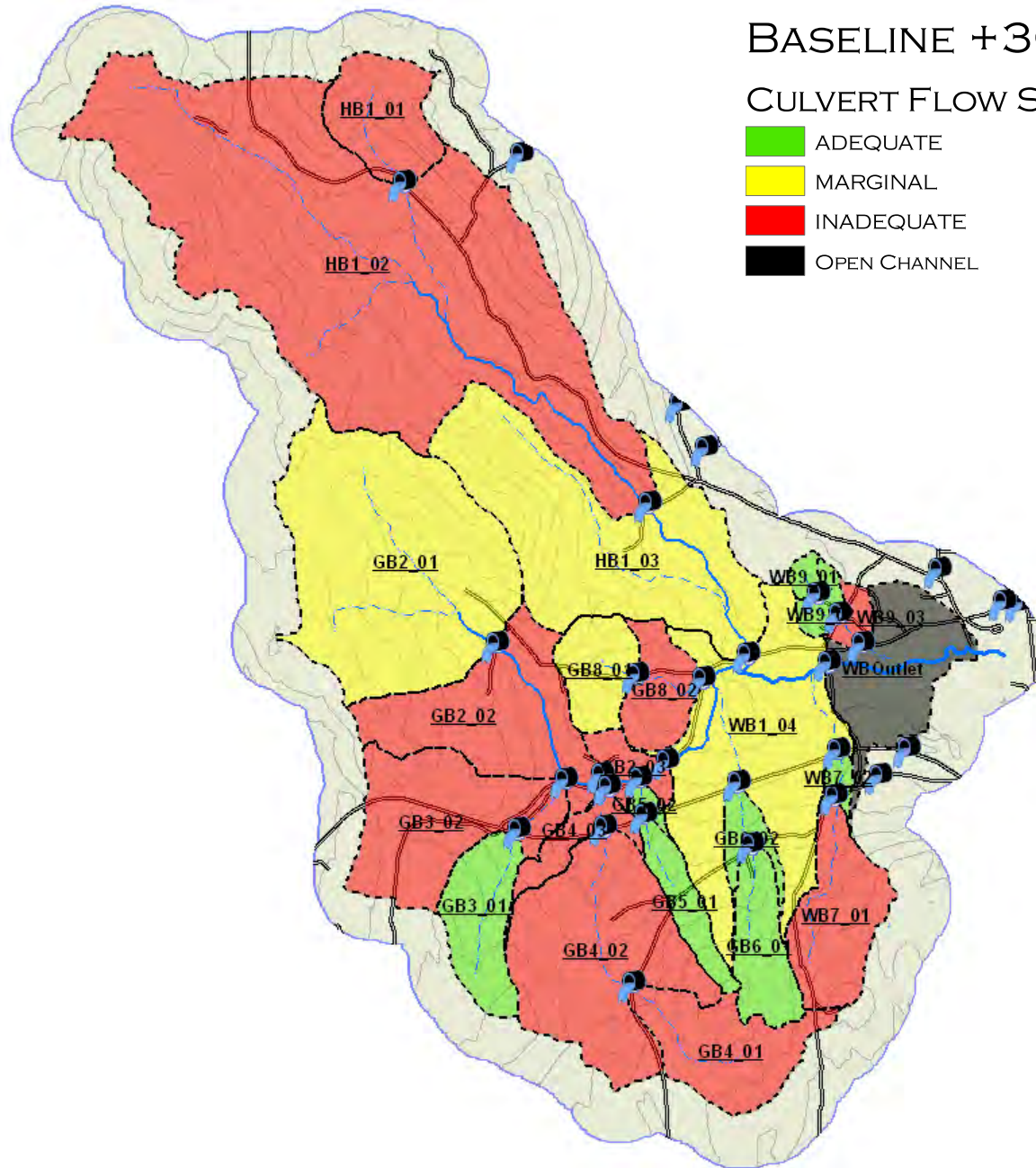


Photo: M. Engert

BASELINE +30%

CULVERT FLOW STATUS

- ADEQUATE
- MARGINAL
- INADEQUATE
- OPEN CHANNEL



The Natural Environment

- Opportunities:
 - Wetland & Watershed Management
 - Surface Waters
 - Fauna and Flora
 - Agriculture



Photo: M. Engert

The Social Environment

- Opportunities
 - Social Services
 - Public Health
 - Emergency Services
 - Sustainable Business Development
 - Food Security



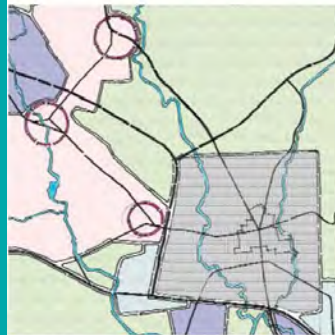
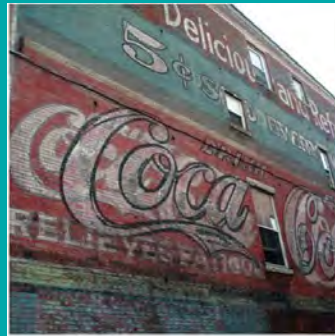
Photo: Clipart

Resiliency in Keene

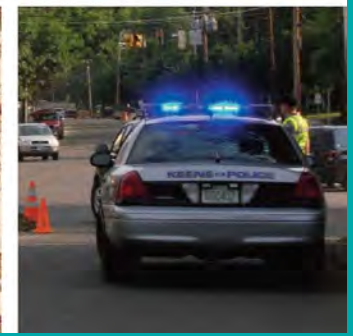
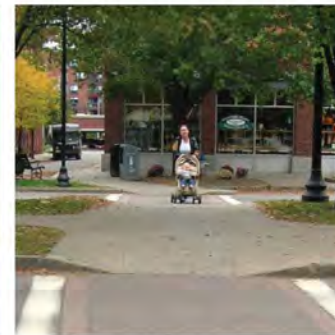
- Develop energy efficiency and sustainable design standards
- Decrease runoff from sites
- Enhance ability of Stormwater systems to handle large storms
- Develop No Build zones
- Create migratory pathways for animals
- Promote renewable energy resources
- Increase local food production
- Improve reliability of emergency communications

2010 Comprehensive Master Plan

- Written through the lens of a changing climate
- Emphasis on Community Sustainability
- Sets goals and actions for future land use, capital projects, and operating budget



Keene Comprehensive Master Plan

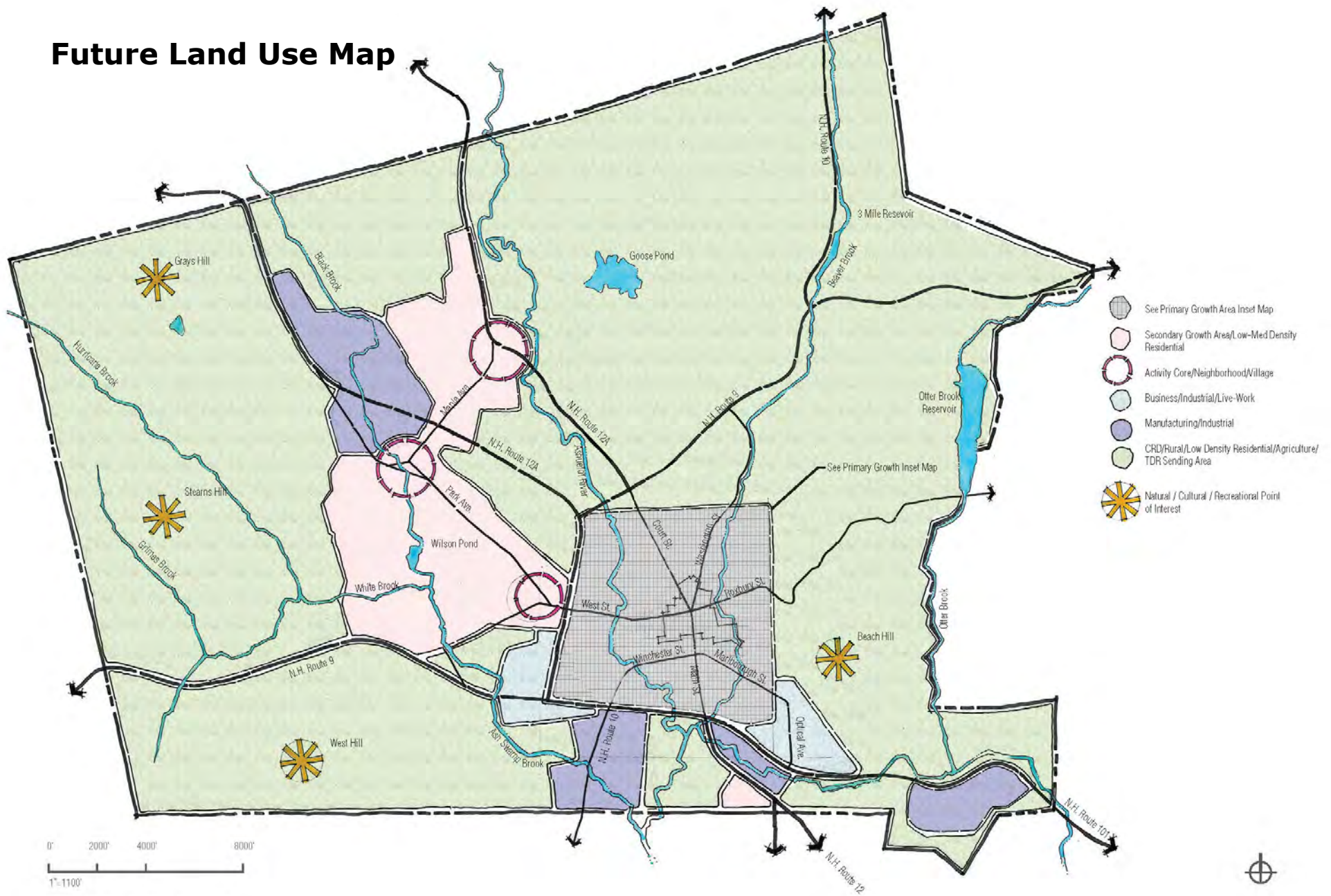


2010 Comprehensive Master Plan

Top implementation strategies

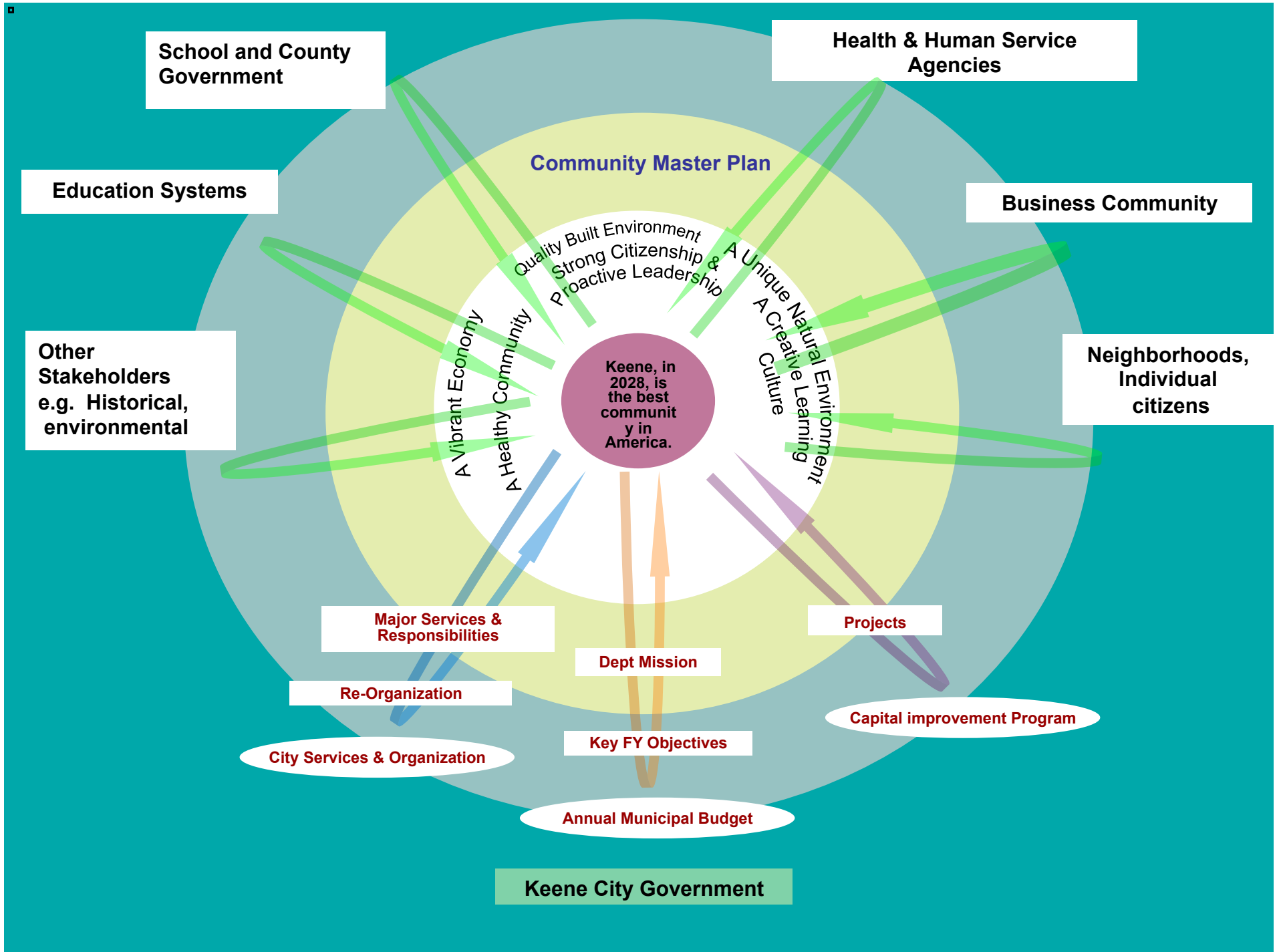
- Align Land Use and Zoning Regulations
- Improve Transportation Network
- Neighborhood Planning
- Neighborhood Weatherization
- Utilize Low Impact Design
- Become a Vision 2020 Champion
- Continue Climate Change Program
- Develop an Implementation Plan

Future Land Use Map



FUTURE LAND USE MAP

City of Keene, NH



Capital Improvement Program Project Form

CITY OF KEENE, NEW HAMPSHIRE
2012 - 2017 Capital Project Funding Request

TARM BIOMASS
 Technical Datasheet
 P4 Pellet Boiler
 Model #1A-0025, 1936 400W

TUV AUSTRIA

... fuel delivery system and ...
 ... ble after the use of the Sally ...
 ... City Hall boilers which ...
 ... n be sourced locally ...
 ... be existing ...
 ... 'iciency ...
 ... version

OPERATING BUDGET IMPACT:									
personnel									
non-personnel									
capital									
debt service									
TOTAL		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0



PROJECT DESCRIPTION:
 Purchase and install a Biomass Pellet boiler and dedicated vent stack. The Boiler Plant. AS ...
 Port is discontinued by District Court. AS ...
 will continue to operate as back up and during ...
 Pellet fuel will be stored in an outdoor silo which ...
 heating plant in City Hall is more than 30 years old and ...
 approximately 6,500 gallons of fuel per year at an annual ...
 or better and is estimated to reduce fuel costs by approximately ...
 will be reduced by 68.5 metric tons per year which will greatly ass.

Estimates for project costs and savings have been provided by Honeywell ...
 have been included in the Energy Performance Contract with Honeywell if no ...
 District Court. This project assumes that the District Court will relocate to a new ...

FINANCIAL PLAN & PROJECT COSTS

	PRIOR	FY12	FY13	FY14	FY15
EXPENDITURES:					
pre design			308,650		
design					
construction					
property acq					
equipment acq					
TOTAL			308,650		
FUNDING:					
current rev.					
short term					
long term					
federal					
state					
other					
TOTAL			308,650		
OPERATING BUDGET IMPACT:					
personnel					
non-personnel					
capital					
debt service					
TOTAL					



Observations

- #1 Leadership**
- #2 Emphasize education/
information**
- #3 Keep the conversation going**
- #4 Integrate into all aspects of
decision making**
- #5 Include all Town departments**
- #6 Make Economic arguments**

Observations

- #7 Use new tools – social marketing**
- #8 Partner with anyone you can**
- #9 Dedicate staff time**
- #10 Run a speaker series**
- #11 Push higher levels of Gov't to act**
- #12 Mitigation before adaptation**

Observations (is it working?)

2015 projected emissions are 255,000 tons

- Need to be at 188,000 to make 10% reduction

The target can be reached but

- Its not enough
- Local government can't do it alone

Contact Information

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