Falmouth Green Ribbon Commission on Energy and Climate Change

Minutes: June 19, 2008 Meeting

Russell Room | Library | 7 pm – 9 pm

Submitted By Michael Morrison & Bill Hastings

Attendees: Neil Gilbert, Sara Bachman, John Brautigam, David Tucker, Dee Conroy-Vella, Barb Dibiase, Jed Wright, Craig Baranowski, David Gagnon, Bob Welch, Claudia King, Bill Hastings, Michael Morrison.

Visitors: —

Open:

Dave Gagnon: Suggested a few minutes at each meeting to share "cool stuff". At the end of the meeting. Group Agreed

Craig Baranowski: Who should we send things to at this point? Answer: the Steering Committee until we get other channels set up.

Claudia King: How do we relate to one another?

Agreed that we should have a section of each meeting for exchanging thoughts; and that we should have an online mechanism for sharing information among the Commission. ***Barb*** *will look into how we can do this*.

Key Issues:

Claudia King: Town profile or "character". E.g., miles of roads, institutions and interest groups, how do things get done; demographics; etc.

Dave Gagnon: Found very detailed report on Falmouth on the web. Will look for it

Claudia King: Volunteered to be point person for Town profile effort.

Bob Welch: Reminded those who have not sworn in to do so.

Agreed: *To accept "Key Topics" document developed by Bill as a working document listing key issues.*

Climate Science

Michael Morrison: Noted that climate is one issue we face, and that energy is another. This presentation's focus is climate, and we anticipate that Bill will present on energy soon.

Presented science of what we know now about climate. Carbon dioxide range has been 180 ppm to 280 ppm for last 800,000 years; recently fossil fuel combustion has increased levels to 385 ppm. Scientific studies from the 1800's to the present that reveal CO2 as a major climate control were discussed

Further discussion centered on current levels being the highest for 800,000 years, and probably for 20 to 30 million years. There is significant concern in

the scientific community that a cycle of permafrost methane emissions could soon begin, creating a "tipping point" from which recovery would be extremely difficult.

Current estimates suggest that we must reduce CO2 levels to below 350 ppm. Current estimates are that the East Antarctic Ice Sheet formation took place at about 425 ppm (350 to 500 ppm estimated range) so there is concern that melting could occur should we exceed that level.

Energy & Emissions **Bill Hastings**: Reviewed Michael Morrison's rough estimates of Falmouth's overall emissions and energy use. From EPA, Falmouth is estimated to emit 53,000 metric tons of carbon per year. The estimate for 1990 is 29,000 metric tons of carbon per year. From EIA, Falmouth is estimated to use about 685 billion watt-hours per year.

Falmouth Audit **Barb Dibiase**: Barb reviewed software (ICLEI) she has obtained with data on number and size of buildings in many categories which might be used for developing a town-wide estimate of emissions. ICLEI would allow us some analysis flexibility – Barb may provide further information in future Meetings.

Dave Gagnon: Pointed out that a 50% increase in population between 1990 and 2008 (for the Town) would need to be factored into the modeling in terms of meeting annual reduction targets for the interim period between now and 2050.

Task Division The Steering Committee forwarded several different Options for the breakdown of Tasks. We will use the "Key Points" agreed (above) and target to address those Key Points using one of the Task Division Options. The Group debated each Option and how to go forward.

Jed Wright: Suggested that we look at other Towns & Cities prior to forming a structure. Jed agreed to look through other Reports and provide a summary next week

Craig Baranowski: agreed to look through Municipal structures/ideas and report back next week.

The decision on Task Division (using "Key Points") was deferred to the 27th June pending the reviews above.

Further Discussion **Claudia King:** Suggested people listen to information about jobs, health, children, environmental degradation, and that we should have a "bouquet" of reasons for action when communicating outside the Commission.

Craig Baranowski: Suggested that we must offer a path for action along with any reasons for action. Noted that he concluded the "cold-climate heat pump" may be a cost saver. Will research further.

Jed Wright, Barb Dibiase, and Craig Baranowski: The "residential", "commercial", "industrial" division is common in the utilities and may be a good division for us to use. A "municipal" division was also discussed.

Michael Morrison: Suggested looking for "natural" divisions, tasks that have an identity, as an approach for dividing work

Bob Welch: Agreed looking at other Climate Action Plans for insights. Put these online on our communications resource.

Claudia King: Suggested starting with municipality as an identifiable group with a limited number of people to deal with.

Bob Welch: Is the new school a place to start?

Craig Baranowski: Volunteered to do a review of town buildings.

Michael Morrison: Suggested starting with four tasks: A) Common statement of reasons to act, of the problem to be solved, and of our overall strategy for reaching our goals; B) Establishing a communications infrastructure (as discussed earlier); C) Beginning to develop a "Town profile" as suggested by Claudia; and D) A review of other towns and Climate Action Plans.

Bill Hastings: Suggested that we look for over-riding tasks, such as communications that we will need in order to do anything.

Bob Welch: Reiterated our goal of making recommendations to the Town.

Dave Tucker: Suggested using the schools as a vehicle for reaching into the community.

Introductions

Neil Gilbert and **Sara Bachman** introduced themselves.

Closeout

Bill Hastings: Suggested it would be good to have someone from the school at every meeting.

Sara Bachman: Reported that there is interest at the school, and that she hoped to be able to bring projects from the Commission to the school, and students to the Commission.

Claudia King: Requested that we standardize meeting times.

Jed Wright: Offered Fish and Wildlife conference room, suggested Maine Audubon as an alternate location.

Idea Exchange

Dave Gagnon: How a truck is loaded makes a difference. The University of Maine has a program for setting up wind data towers for wind power sites (http://www.umext.maine.edu/energy/windturbinerfp.htm), and a program for ethanol from wood pulp. Bill Nemitz article on Sam Saltonstall and Peter Dugas helping folks with home audits on a simple financial basis. Suggested we must focus on business, and we must know "where the carbon is" to make our work effective.

Next Meeting

Friday, June 27, 2008; Falmouth Public Library; 5:00 - 5:30 PM Social (Half) Hour; 5:30 - 7:30 PM Meeting.

Meeting Concluded at 9:20

Documents On Following Pages

Overall Guidelines:

1) Build upon past work effort here and in other places.
    - Develop "Best Practices"
2) Cite "obstacles" to achieving results and prepare plan for timely result(s).
3) Take bold action
4) Look at both short-term and long-term ideas – emphasize our ability to achieve the goals along with the time and capital necessary to achieve them.

Key Topics

1) Preparation of "Emissions" Inventory for the Town
    - Evaluate and report (to Commission) key Emission sources
    - Examine Emissions targets of various Protocol
    - Recommend Emission reduction targets by year and by CAR (Compound Annual Reduction)
2) Need to establish a Communications Group / Plan
    - Examine our "vulnerabilities"
    - Seek to avoid being marginalized by factors beyond our control.
    - Communicate constantly with the Community
        - Consider Public Forums
    - Look at Government funding and work to gain access to it
3) Understand Town Energy Usage
    - Apply Committee Lighting Management expertise
    - Look at early 18th and 19th Century design ideas (locally)
    - Municipal
        - Examine closely the new Elementary School Project as a key opportunity
        - Use existing Town work and conduct Energy Audits for Municipal as well as certain Residential & Commercial users (on a representative sample basis)
    - Residential
    - Commercial
        - Building Codes, Ingress and Egress
4) Short –Term Projects
    - Examine Residential actions that have quick payback response
    - Commercial usage evaluations.
5) Business Incentives
    - Establish Falmouth as a "magnet" for Green businesses
    - Consider Pivot Incentive System
6) Capital Projects
    - Cold Climate Heat Pumps
    - Smart Metering
    - Examine Tidal Power opportunity and practicality
    - Examine Natural Gas access opportunities (Power and new distribution)
    - Options to replace No.2 Fuel Oil as primary heating source here.

Rough Emission & Energy Estimates for Falmouth

Prepared by Michael Morrison, June 18, 2008

Emissions

The EPA estimates Maine's 1990 per capita greenhouse gas emissions to be 3.8 metric tons of carbon per year (MTC/yr)[1,2]. The 1990 census indicates that Falmouth's 1990 population was 7,600, thus Falmouth's 1990 emissions are estimated to be 29,000 MTC/yr. The EPA estimates are for all sources and sinks, including an estimated 12% uptake of carbon by forests and soils and implying total emissions about 11% higher.

The EPA also estimates that U.S. carbon dioxide emissions grew 1% per year on average since 1990[3]. One percent emissions growth applied to Maine's 1990 per capita emissions yields 4.6 MTC/yr per person in 2008. Falmouth's 2008 estimated population[4] is 11,500 providing estimated current emissions of 53,000 MTC/yr.

Energy

The U.S. Department of Energy's Energy Information Administration (EIA) provides state-level energy consumption data[5], with the most recent information from 2005. A compilation of the detailed data for 2005, divided by the same report's 2005 population estimate for Maine of 1,312,000 and multiplied by Falmouth's estimated 2008 population of 11,500, yields the estimates of Falmouth's energy use shown in the accompanying table. These estimates have all been converted to billions of watt hours per year (GWh/yr)[6] for ready comparison. The "fuel" values reflect all fuels, including gasoline, diesel, home heating oil, propane, natural gas, etc. All of the fuel values represent fossil fuel combustion. The electricity numbers include a 19% contribution from hydroelectric and a 23% contribution from wood energy sources. These numbers do not include the energy used elsewhere, and the emissions produced elsewhere, in the manufacture of our purchases such as consumer goods, food, construction materials, or motor vehicles. Excluding industrial fuel and the embodied energy in purchased goods, Falmouth is estimated to have direct energy consumption of 685 GWh/yr, or 78 MW of continuous power.

End Use	GWh/year
Total Electricity	108
Residential Fuel	170
Commercial Fuel	71
Industrial Fuel	110
Transportation Fuel	336

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[1] http://www.epa.gov/climatechange/emissions/downloads/MESummary.PDF

[2] 1 metric ton = 1000 kilograms = 2,205 pounds. Note that this measure is in *carbon*, emissions are also commonly expressed in terms of *carbon dioxide*. 3.7 kilograms of carbon dioxide contains 1 kilogram of carbon. Thus, Falmouth's per capita emissions of carbon dioxide are 3.8 MTC/yr times 3.7, or 14.1 metric tons of carbon dioxide per year.

[3] http://www.eia.doe.gov/oiaf/1605/flash/flash.html . Does not include sinks or other non-carbon dioxide emissions which are also important.

[4] Kathleen Babeu, personal communication.

[5] http://www.eia.doe.gov/emeu/states/sep_use/notes/use_print2005.pdf

[6] One billion watt hours (GWh) equals one million kilowatt hours (kWh).

Town of Falmouth Carbon Footprint Research Data

June 2008

Residential

Item	Total	Average (Mean)
Total Number of Parcels[i]	4,214	
Land Area (Acres) of Parcels	8,926	2.1[ii]
Actual Year Built		1958
Living Area of Buildings (Sq. Ft.)	9,608,736	2,280.2
Other Area of Buildings (Sq. Ft.)[iii]	9,346,199	2,217.9
Gross Area of Buildings (Sq. Ft.)	18,954,935	4,498.1
Bedrooms[iv]	13,487	3.2
Total Bathrooms[iv]	10,754	2.6
Swimming Pools	262	0.06

Commercial

Item	Total	Average (Mean)
Total Number of Parcels	210	
Land Area (Acres) of Parcels	1,052.2	5
Actual Year Built		1969
Heated Area of Buildings (Sq. Ft.)	1,948,701	9,279.5
Other Area of Buildings (Sq. Ft.)[v]	382,752	1,822.7
Gross Area of Buildings (Sq. Ft.)	2,331,453	11,102.2
Bedrooms (Mixed Use Buildings)	3	0
Total Bathrooms	414	2.0
Asphalt (Sq. Ft.)	2,299,906	
Concrete (Sq. Ft.)	14,895	
Total Paving (Sq. Ft.)	2,314,801	11,022.9

[i] See Residential Detail table (on reverse).

[ii] Average Residential Land Area does not include the 79 acres in condominium parcels, although Total Residential Land Area does.

[iii] "Other Area" in res. buildings includes non-heated space such as attics, unfinished basements, decks, attached garages, etc.

[iv] Residential bedroom and bathroom data generally excludes apartments.

[v] "Other Area" in commercial buildings includes non-heated space such as warehouse storage, loading areas, etc.

Heat Fuel Summaries

Type	Residential	Commercial	Total
Coal/Wood	49	4	53
Secondary Woodstove[vi]	*462*	*2*	*464*
Electric	302	11	311
Gas	203	226	424
Oil	3541	104	3640
Solar Assisted	2	0	2

Residential Detail

Residence Type	Total Number of Parcels	Total Number of Units
Single Family Home	4083	
Two Unit Apartment Building (Duplex)	113	226
Three Unit Apartment Building	6	18
4 to 7 Unit Apartment Building	4	18
8 or More Unit Apartment Building	8	330
Totals	4,214	4,675

Outbuildings[vii]

Total Number	1978
Total Square Footage	990,427
Average (Mean) Sq. Ft.	904

[vi] This item lists the number of buildings containing a woodstove for secondary or auxiliary heating purposes. For all other entries on the list, the fuel type listed is the primary heat source in the building.

[vii] Outbuildings include barns, detached garages, sheds, etc.