

**PLEASANT STREET ACADEMY  
BIOMASS DISTRICT HEATING SYSTEM**

**Collaborative Proposal**

**UNIVERSITY OF MAINE AT FORT KENT &  
MAINE SCHOOL ADMINISTRATIVE DISTRICT 27**

**FORT KENT, MAINE**

**Submitted to  
USDA Rural Development High Energy Cost Grant Program  
September 8, 2010**

**UMFK  
President: Wilson Hess  
Official contact: John Murphy, VP for Administration**

**Written & prepared by  
Brian Kermath  
Center for Rural Sustainable Development, UMFK  
&  
Laura Colban  
Skanden Energy**



**Part A. SF 424 "Application for Federal Assistance"**

APPLICATION FOR FEDERAL ASSISTANCE		2. DATE SUBMITTED Sept. 9, 2010	Applicant Identifier
1. TYPE OF SUBMISSION: <input type="checkbox"/> Application <input type="checkbox"/> Preapplication		3. DATE RECEIVED BY STATE	State Application Identifier
<input type="checkbox"/> Construction <input checked="" type="checkbox"/> Non-Construction		4. DATE RECEIVED BY FEDERAL AGENCY	Federal Identifier
5. APPLICANT INFORMATION		Organizational Unit	
Legal Name University of Maine at Fort Kent		Department Administration	
Organizational OUMS: 00774020		Division	
Address: Street 55 University Drive City Fort Kent County Aroostook State ME Zip Code 04743		Name and telephone number of person to be contacted on matters involving this application (give area code): First Name Middle Name Last Name Suffix Phone Number (give area code) (207) 834-7510 Fax Number (give area code) (207) 834-7879	
6. EMPLOYER IDENTIFICATION NUMBER (EIN) 01-3060759		7. TYPE OF APPLICANT: (See back of form for Applicant Types) <input checked="" type="checkbox"/> (1) State Controlled Institution of Higher Education <input type="checkbox"/> Other (specify)	
8. TYPE OF APPLICATION: <input checked="" type="checkbox"/> New <input type="checkbox"/> Continuation <input type="checkbox"/> Revision If Revision, enter year (provide Federal ID number) (see back of form for description of revisions) Other (specify)		9. NAME OF FEDERAL AGENCY: Maine State Department of Agriculture	
10. CATALOG OF FEDERAL DOMESTIC ASSISTANCE NUMBER: TT1 F (Name of Program) Rural Development High Energy Cost Grant 110-3-0-0		11. DESCRIPTIVE TITLE OF APPLICANT'S PROJECT: Pleasant Street Academy Business District Planning Project	
12. AREAS AFFECTED BY PROJECT (Cities, Counties, States, etc.) Fort Kent, Aroostook County, Maine		14. CONGRESSIONAL DISTRICTS OF: a. Applicant 2 b. Project 3	
13. PROPOSED PROJECT Start Date: April 1, 2011 Ending Date: March 31, 2012		16. IS APPLICATION SUBJECT TO REVIEW BY STATE EXECUTIVE ORDER 12372 PROCESS? a. Yes <input type="checkbox"/> THIS PREAPPLICATION/APPLICATION WAS MADE AVAILABLE TO THE STATE EXECUTIVE ORDER 12372 PROCESS FOR REVIEW ON DATE: b. No <input checked="" type="checkbox"/> PROGRAM IS NOT COVERED BY E.O. 12372 <input type="checkbox"/> OR PROGRAM HAS NOT BEEN SELECTED BY STATE FOR REVIEW	
15. ESTIMATED FUNDING:		17. IS THE APPLICANT DELINQUENT ON ANY FEDERAL DEBT? <input type="checkbox"/> Yes If "Yes" attach an explanation. <input checked="" type="checkbox"/> No	
a. Federal \$ 2,017,500		18. TO THE BEST OF MY KNOWLEDGE AND BELIEF, ALL DATA IN THIS APPLICATION/PREAPPLICATION ARE TRUE AND CORRECT. THE DOCUMENT HAS BEEN DULY AUTHORIZED BY THE GOVERNING BODY OF THE APPLICANT AND THE APPLICANT WILL COMPLY WITH THE ATTACHED ASSURANCES IF THE ASSISTANCE IS AWARDED.	
b. Applicant \$ 300,104		19. Authorized Representative: a. Title President, University of Maine at Fort Kent b. Signature of Authorized Representative <i>[Signature]</i>	
c. State \$		c. Telephone Number (give area code) (207) 834-7510	
d. Local \$		e. Date Signed 09/09/10	
e. Other \$		f. Title Signed President	
f. Program Income \$		Previous Edition: Updated	
g. TOTAL \$ 3,000,704		Authorized for Local Recurrence	

Reset Form

**PLEASANT STREET ACADEMY  
BIOMASS DISTRICT HEATING SYSTEM**

**COLLABORATIVE PROPOSAL**

by

**THE UNIVERSITY OF MAINE AT FORT KENT &  
MAINE SCHOOL ADMINISTRATIVE DISTRICT 27, FORT KENT**

**Part B. NARRATIVE GRANT PROPOSAL**

**Part B. 1. Executive Summary**

The University of Maine Fort Kent (“UMFK”) and Maine School Administrative District 27 (“MSAD 27”) have partnered together, in an extension of our joint five year old “College Community Project” (unofficially known as the “Pleasant Street Academy”), to develop an environmentally friendly initiative that will lower heating costs and stimulate the local economy in the economically distressed and high energy cost community of Fort Kent, Maine.

The project involves the purchase and installation of a large district biomass heating system that will be connected by underground hot water pipes to nine university buildings (together, the “UMFK Facilities”), and two high school buildings (together the “Project Facilities”).

Skanden Energy, a Maine based alternative energy firm with previous experience implementing wood and biomass energy boilers at Maine public schools, has assisted with the project in the design of *MultiFuel Heating Plant* to be fueled from locally produced biomass energy resources.

The district heating plant will provide the following benefits:

1. lower fuel costs by up to 80% (compared with #2 distillate fuel oil),
2. stabilize fuel prices,
3. stimulate the local economy,
4. enhance environmental sustainability,
5. strengthen national security by reducing dependence on foreign oil,
6. reduce maintenance costs by displacing eight oil-fired boilers with a single state-of-the-art boiler with proven success in Europe,
7. help UMFK meet its climate neutrality obligations under the American College and University Presidents Climate Commitment.<sup>1</sup>
8. complement other “Pleasant Street Academy” efforts between UMFK and MSAD 27 (see “Part B.5.b)

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<sup>1</sup> “Climate neutrality” means operating with zero net fossil and synthetic greenhouse gas emissions, which may be achieved by minimizing such emissions and by using carbon offsets or other measures to mitigate any remaining emissions. [www.presidentclimatecommitment.org/about/commitment/faq#5](http://www.presidentclimatecommitment.org/about/commitment/faq#5)

UMFK and MSAD 27 are in Ft. Kent, Maine, in the St. John Valley of northernmost Aroostook County, one of the most rural, heavily forested and economically distressed areas of New England.

This sparsely populated community has recently lost many of its major employers and unemployment countywide soared to over 11% in recent months.<sup>2</sup> Only 49% of Fort Kent residents over 16 years old are employed.<sup>3</sup> The hardship faced by the entire community is tremendous and has been exacerbated by the community's lack of natural gas pipelines, isolation from the New England electricity grid, and the high cost of household energy. Given today the price of #2 fuel oil and the extremely cold and long winters in northern Aroostook County, Maine, the average household in Fort Kent must spend over \$4,230 annually to adequately meet household heating needs. Heating oil accounts for the largest portion of household energy expenditures in Fort Kent, although heating is supplemented with propane, kerosene, coal, electric heaters, firewood, and pellets. The current annual cost of heating all Project Facilities is \$334,912, of which \$243,716 is attributed to space and water heating of the UMFK facilities, and \$91,197 is for MSAD 27 buildings.

We propose lowering these costs by installing a Skanden MultiFuel boiler to create a shared heating plant, and connecting it to all of the Project Facilities. The boiler will provide hot water for space heating and domestic hot water for the eleven (11) Project Facilities. This biomass district heating plant would be similar to fossil fuel heating systems in that it provides hot water for a variety of uses to many buildings within a district. Instead of fossil fuels, this plant will burn locally sourced, environmentally friendly, climate neutral, renewable biomass. Wood chips are available at an "energy equivalent" price that is approximately 80% lower than the cost of heating oil today. This would cut heating costs for the affected facilities 80% and enable UMFK and MSAD 27 to save \$282,389 in the first year based on a cost of \$2.83/gal for fuel oil and \$40/ton for wood chips. Over five years the savings would be nearly \$1.8 million (assuming that oil prices increase 10% per year with a year-1 price of \$2.83/gal). It would also boost the local economy by: 1) dramatically reducing costs, 2) supporting local landowners and natural resources based workers, 3) keeping dollars spent on energy in the local economy, 4) stabilizing the heating portion of the institutions' budgets, 5) retaining jobs through costs savings, and 6) creating new jobs.

The total project cost is \$3,000,724. The applicants are requesting \$2,617,560 from the USDA Rural Development High Energy Cost Grant Program. The applicants will cover \$290,840 in cash and \$92,324 in-kind for a total match of \$383,164 or 13.2% of the total request.

In the event that the High Energy Cost Grant Program is only able to partially fund our project, we could curtail the scope and lessen costs by reducing the number of buildings that are serviced by the district plant (connecting the district heating plant to only the highest oil consuming Project Facilities, and not to all Project Facilities.)

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<sup>2</sup> U.S. Bureau of Labor Statistics - Last updated July 26, 2010.

<sup>3</sup> Census 2000

The applicants, UMFK and MSAD 27, seek additional points under the priority evaluation criteria based on:

- extreme rurality (the town of Fort Kent has a population of 1978<sup>4</sup>),
- economic distress (poverty),
- economic hardship (pervasive loss of jobs, out-migration, and high percentage of children on free and reduced lunch),
- imminent hazard and critical need (environment damage related to the use of over \$118,000 and risk that the high school will not be properly heated in the event that oil prices return to the high levels of 2007/2008 due to severe budget cuts), and
- cost sharing.

The contact person for this project is:

John D. Murphy  
Vice President for Administration  
University of Maine at Fort Kent  
23 University Drive  
Fort Kent, ME 04743  
207-834-7516  
[jdmmurphy@maine.edu](mailto:jdmmurphy@maine.edu)

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<sup>4</sup> US Census,  
[http://factfinder.census.gov/servlet/SAFFPopulation?\\_event=ChangeGeoContent&geo\\_id=16000US3325729&geoContext=&street=&county=fortkent&cityTown=fortkent&state=04000US23&zip=&lat=&lon=&activeGeoDiv=&useEV=&pctxt=0&angel=010&submenuId=population\\_0&ds\\_name=null&ci\\_nbr=null&or\\_name=null&prog=null&3Anull&keyword=&industry=](http://factfinder.census.gov/servlet/SAFFPopulation?_event=ChangeGeoContent&geo_id=16000US3325729&geoContext=&street=&county=fortkent&cityTown=fortkent&state=04000US23&zip=&lat=&lon=&activeGeoDiv=&useEV=&pctxt=0&angel=010&submenuId=population_0&ds_name=null&ci_nbr=null&or_name=null&prog=null&3Anull&keyword=&industry=)

## **Part B. 2. TABLE OF CONTENTS**

Part A.	SF 424 “Application for Federal Assistance” (Completed by UMFK, the fiscal agent)	Coversheet
Part B.	Narrative Grant Proposal	
1.	Executive Summary	p.1
2.	Table of Contents	p.4
3.	Applicant Eligibility	p.6
4.	Community Eligibility	p.7
	a. Rurality	p.7
	b. Economic Distress/ Economic Hardship	p.7
	c. High Energy Cost Community	p.8
5.	Coordination with State Rural Development Initiatives	p.10
	a. State of Maine “Wood-to-Energy” Initiative	p.10
	b. “Pleasant Street Academy”	p.11
6.	Project Overview	p.12
	a. Current situation	p.12
	i. Environmental hazard	p.12
	ii. Economic Risk - Critical Need and Imminent Hazard	p.13
	iii. Proposed Solution: Advantages of Biomass Heating	p.13
	b. Project Design	p.18
	c. Regulatory and Other Approvals	p.21
	d. Goals of the Project and Performance Measures	p.21
	e. Proposed Project Budget	p.22
	i. Budget Narrative	p.22
	ii. Budget Spreadsheet	p.23
	iii. SF-424A, “Budget Information- Construction Programs”	p.24
7.	Supplementary Materials, Cover	p.26
	a. Letter from Andrew Plant of U Maine Cooperative Extension.	P.27
	b. Letter from Don Guimond, Fort Kent Town Manager.	P.28
	c. Letter from Patrick O’Neill, Superintendent of MSAD 27.	P.29
	d. Skanden Energy MultiFuel brochure.	P.30
	e. Email from the EPA, confirming that the proposed boiler exceeds proposed EPA boiler regulations.	P.34
	f. Site Map	p.37
	g. Oil Consumption spreadsheet	p.38

Part C.	Additional Required Forms and Certifications , Cover	p.39
1.	SF-424B, Assurances - “Non-Construction Programs”	p.40
2.	SF-LLL, “Disclosure of Lobbying Activities” <sup>5</sup>	p.42
3.	“Certification Regarding Debarment, Suspension and Other Responsibility Matter- Primary Covered Transactions”	p.43
4.	Environmental Profile	p.44

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<sup>5</sup> Neither UMFK, MSAD 27, nor Skanden have engaged in lobbying. SF-LLL doesn't allow for this response.



### **Part B. 3. Applicant Eligibility**

#### **University of Maine Fort Kent**

Founded in 1878 as the Madawaska Training School, UMFK is now one of the seven campuses in the University of Maine System. UMFK educates approximately 1,000 students per year with the largest number of majors in nursing, education, and rural law enforcement. The institution is free of any debarment that would restrict its ability to contract with the federal government.

#### **MSAD 27**

Maine School Administrative District 27 was organized in 1963 under the provisions of Title 20A Maine Revised Statutes as the Local Education Agency providing public education to students from the towns of Allagash, Eagle Lake, Fort Kent, New Canada, St. Francis, St. John, Wallagrass, and Winterville. The school currently has an enrollment of 1,035 students and employs 220 people. Under Maine law, MSAD 27, as a public school unit, is able to conduct all necessary business including contracting with the federal government. MSAD 27 is free of any debarment that would restrict its ability to contract with the federal government.

**Part B.4. Community Eligibility**

The Town of Fort Kent is a small, isolated, economically distressed, rural community in Aroostook County in northernmost Maine on the border with New Brunswick, Canada. The Town suffers from chronic unemployment, poverty, out-migration and high energy costs.

**B.4.a. Rurality**

We are seeking additional points under the priority evaluation criteria based on extreme rurality.

According to Census 2000, the population of Fort Kent was 1978. In addition to Fort Kent, MSAD 27 also serves children from the following communities:

<b>Town</b>	<b>2000 Census population</b>
Allagash	277
Eagle Lake	815
New Canada	360
St. Francis	577
St. John	282
Wallagrass	561
Winterville	196
<b>Total</b>	<b>3,068</b>

Aroostook County, Maine is the largest county east of the Mississippi River. With only 70,000 residents, the county is sparsely populated with limited transportation infrastructure and tremendous distances to markets. The nearest Interstate Highway is 2.5 hours away by automobile and is accessed on 2-lane highways only. The closest international airport with frequent service is 3.5 hours away. The only rail line serving the region is currently in bankruptcy and runs on a limited schedule and was shut down at times during the past winter.

**B.4.b. Economically Distressed Community Facing Substantial Economic Hardship**

The applicants seek additional points under the priority evaluation criteria based on both “economic distress” and “substantial economic hardship.”

According to Census 2000, the median household income in Fort Kent was \$20,914, compared with \$28,837 for Aroostook County and \$37,240 for the State of Maine. The median household income for Fort Kent, therefore, was only 56% of the State median household income. Thus, Census 2000 data supports a finding of economic distress.

The area is also experiencing substantial economic hardship, as evidenced by decreased employment, high rates of out-migration, and a high percentage of students on the “free and reduced lunch” program. Only 49% of Fort Kent residents over 16 years of age are

working compared with 64% in the US. (Census 2000). The population has been decreasing for nearly 40 years, but the pace has increased dramatically in recent years. In the early 1960s, the county had over 100,000 residents, yet today the population is near 70,000. The 2010 census will likely reveal a population below 70,000. These numbers are reflected in public school enrolments. In 1970, enrollment at MSAD 27 was 2,597. Last year, it was 1,085, and this year only 1,037, a one-year decline of 4.5%. Moreover, 47% of MSAD 27 children are on the “free and reduced lunch” program.

Thus, Fort Kent, with a median household income of \$20,914, 56% of the state median, is an economically distressed community. A town employment level of 49% compared with 64% nationally, 47% of children on free/reduced lunch, and extreme out-migration demonstrate substantial economic hardship.

#### **B.4.c. High Energy Cost Community**

In order to properly heat with heating oil, the primary heating source in Fort Kent, households in the town would need to spend in excess of \$3,921/year on fuel oil. With a median household income of \$20,914, residents cannot afford to heat properly, to 68 degrees, with heating oil. Therefore, residences only partially heat their homes, as an economizing measure, and heating oil is supplemented with coal, propane, kerosene, fire wood, biomass pellets, grains, and waste oil. Data do not exist on the total average amount spent on the various fuel mixes used in our community. As a result, data also are not available on total Btu consumption. The best way to determine the cost to heat a home with oil alone then, is to determine the amount of Btus necessary to properly heat a home. This may be accomplished using Heating Degree Days (HDD), a measure that indicates the number of degrees needed to raise the indoor temperature to a standard measure of comfort,<sup>6</sup> and average home size.

Fort Kent, located in northern Maine, far inland from the moderating effects of the ocean and north of Quebec City, is one of the coldest towns in Maine. Winters are long and cold, with temperatures occasionally dipping to negative 50 degrees Fahrenheit, without a wind-chill factor. According to the National Weather Service Forecast Office,<sup>7</sup> the average HDD for several Maine towns between 1971 and 2000 was as follows:

<b>City/Town</b>	<b>Average Yearly HDD 1971-2000</b>	<b>Max Daily HDD</b>
Portland	7,231	44
East Machias	7,345	45
Augusta	7,352	46
Bangor	7,773	48

<sup>6</sup> The EIA defines HDD as “A measure of how cold a location was over a period of time, relative to a base temperature. In this report, the base temperature is 65 degrees Fahrenheit; the period of time is 1 year. The HDD for a single day is the difference between that day’s average temperature and 65 degrees, if the daily average is below the base temperature, and zero if the daily average exceeds or equals the base temperature. The HDD for a longer period is the sum of daily HDD for days in that period.”

<sup>7</sup> [www.weather.gov/climate/homesis.php?wfo=car](http://www.weather.gov/climate/homesis.php?wfo=car)

Houlton	9,261	54
Caribou	9,473	56
Fort Kent	10,079	60

New Energy Watch has presented data that can be used to estimate how many Btus are required to heat homes to 68 degrees Fahrenheit based on HDD and average house size.<sup>8</sup> According to New Energy Watch, a 2,000 sq.ft. house in an area with an HDD of 6,600 requires 132,000,000 Btus to maintain 68 degrees Fahrenheit in the home. In a warmer region with an HDD of 2,300 the same house would require only 46,000,000 Btus to warm to the same temperature.

With an average home size of 1,750 sq.ft. in Fort Kent,<sup>9</sup> and an HDD of 10,079, 176,382,500 Btus are required to maintain the temperature of 68 degrees Fahrenheit. Boiler ages are not known in Fort Kent, but very few new oil-fired boilers exceed 90% efficiency. Therefore, assuming 90% efficient boilers, 196 million Btus input are required to produce 176,382,500 Btus of heat. 196 million Btus are the equivalent of 1,410 gallons of #2 distillate fuel oil. At \$2.83/gallon (the most recent weekly price for Maine published by the US EIA),<sup>10</sup> it should cost the average Fort Kent household \$3,999 annually to maintain a proper temperature. This number already is well above the threshold number of \$3,921, but the actual number is likely higher for two reasons.

First, homes in Fort Kent are old and poorly weatherized. According to Census 2000, the median year of home construction in Fort Kent is 1948, implying that home weatherization is likely below standards. In support of this, the State of Maine estimates that home efficiency in the State could be improved by at least 25% on average.<sup>11</sup> Based on the age of household structures and regional poverty rates (which prevents residents from upgrading windows, roofs and walls), home efficiency is likely to be significantly worse in Fort Kent than the rest of Maine.

Second, New Energy Watch calculates the Btus required for space heat alone and not hot water, yet most water in Fort Kent is heated with the same system used for area heat.

Therefore, #2 distillate fuel oil expenditures would be at least \$3,999 in Fort Kent, but likely significantly higher, if residents used oil for all their hot water and space heating needs, and heated to 68 degrees Fahrenheit. Regardless of the exact amount of this expenditure, it is clear that #2 heating oil costs are well over the High Energy Cost benchmark of \$3,921 per year, which represents 275 percent of the national average annual household expenditure for fuel oil. Therefore, the community qualifies as a “high energy cost community” under the NOFA.

<sup>8</sup> [www.newenergywatch.com/re-calculated\\_energy\\_savings.html](http://www.newenergywatch.com/re-calculated_energy_savings.html).

<sup>9</sup> Provided by Barb Pitcairn, Owner/Broker, Aroostook Real Estate, one of the top real estate agencies in Aroostook County.

<sup>10</sup> According to the U.S. Energy Information Administration, on March 15, 2010, the last week for which EIA data is available, the weekly average price of residential heating oil was \$2.83.

[http://www.eia.doe.gov/duav/pet/pet\\_nri\\_wfr\\_dgas\\_SME\\_w.htm](http://www.eia.doe.gov/duav/pet/pet_nri_wfr_dgas_SME_w.htm)

<sup>11</sup> Hart 2002: [www.maine.gov/ocis/docs/2002\\_1\\_15\\_ReduceHouseholdEnergyby25.pdf](http://www.maine.gov/ocis/docs/2002_1_15_ReduceHouseholdEnergyby25.pdf)

## **Part B.5. Coordination with State Rural Development Initiatives**

The applicants are coordinating with two important rural development initiatives: (1) Maine's "Wood-to-Energy Initiative" and (2) our local "Pleasant Street Academy" aimed at encouraging rural residents to attend college.

### **"Wood-to-Energy" Initiative**

In 2008 Maine Governor John Baldacci announced a "Wood-to-Energy Initiative," aimed at bringing together "public and private sectors to explore . . . [ways of using Maine's] forests and natural resources to relieve consumption of nonrenewable oil."

"As a first step in this Initiative, my Administration will pursue a transition to biofuels such as wood pellets and wood chips. We will identify those state buildings where conversion to wood pellets, . . . can reduce costs by 30 to 50 percent. This not only saves money for Maine taxpayers, it generates the investment and business activity to grow Maine's economy."<sup>12</sup>

The Governor's Wood-to-Energy Initiative developed out of his appreciation of the fact that the pellet industry not only brings new jobs and economic development to rural areas, but also provides clean, renewable energy that will reduce the cost of a basic necessity, heating. There are no new industries promising to reduce food prices, housing costs, health care expenses, or the cost of other basic necessities. The biomass thermal industry is unique in this regard. In these difficult times of rising unemployment and economic downturn, the State recognizes that the development of the biomass thermal industry is integral to rural Maine development.

The Governor's vision has been embraced by the Mobilize Maine initiative – an effort coordinated through the State's regional development commissions designed to help identify solutions to regional development in Maine. The overall project is set up around strategic economic sector clusters based on asset mapping analyses with working groups populated with experts and practitioners who work within the various sectors. One of the working groups, the Mobilize Maine Renewable Energy Taskforce has identified renewable energy in general, and biomass in particular as being of critical importance to the long-term viability of Northern Maine. Brian Kermath, Director of the Center for Rural Sustainable Development (CRSD) at UMFK and co-writer of this application serves on the Mobilize Maine Renewable Energy Taskforce.<sup>13</sup> UMFK believes that this project would significantly contribute to the State's objectives, both in practice and as an example to inspire and educate others.

UMFK is working with the State of Maine, municipal, and other local governmental entities to assist them in developing policies that will encourage conversion from oil to locally produced woody biomass fuel, and thereby generate investment and business activity in rural areas of Maine.

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<sup>12</sup> See Excerpts from Baldacci's State of the State 2008 Address, attached hereto.

<sup>13</sup> The proposal was written and prepared by Brian Kermath (UMFK) and Laura Colban (Skanden Energy).

This project will be the first wood chip district heating system in Northern Maine. It will serve as a model for a variety of different types of district heating applications – from schools and community centers, to retail stores, and office buildings. In this manner, it will function as the catalyst for the growth of the biomass fuels industry in Maine and the sustainable development of the rural Maine economy. It will also reduce the fossil carbon footprints of the institutions, which will take UMFK far in meeting its climate neutrality commitment under the American College and University Presidents Climate Commitment, which requires climate neutrality by mid century or sooner.

#### **“Pleasant Street Academy”**

This project is an extension of our five year old “College Community Project” (unofficially known as the “Pleasant Street Academy.”) The “Pleasant Street Academy pools resources to deliver help to raise local aspirations to attend college. Its successful “bridge” programs encompass seven model initiatives:

- *Kinder Kollege* at the start of the “education life span.”
- *Middle School U* with university students going into 7<sup>th</sup> and 8<sup>th</sup> grade classrooms to interact with students and map their educational careers.
- *Early College* program which provides high school students the opportunity to take a college course for free each of their junior and senior years.
- *St. John Valley College Access Program (CAP)* which provides comprehensive, holistic college transition to area adult learners who want to attend college.
- *College 101 for Parents* provides parents of children who are of college age with the tools they need to help their children make a successful transition to college living and learning.
- *St. John Valley Senior College Program* provides intellectually stimulating learning opportunities and activities for adults ages 50 and older.

#### **Letters of Support**

Letters of support from State Representative John Martin, Fort Kent Town Manager Don Guimond, and U Maine Extension agent Andrew Plant are attached. Additional letters of support from elected officials will follow. (See attachments.)

## **Part B.6. Project Overview**

The project involves the purchase and installation of a large district biomass heating system that will be connected by underground hot water pipes to nine university buildings and two high school buildings. The heating plant will be designed for an inexpensive future expansion, phase two, which will occur after this project is completed. Most Project Facilities currently have two oil boilers, one used to generate most heating needs and the other as a back-up and to supplement the primary during peak load periods. Each facility will retain an oil boiler to maintain 100% redundancy for emergencies and maintenance and to supplement the biomass plant during unusually cold periods. Some Project Facilities already share a boiler room, so hook up costs are reduced for such buildings and most have hydronic (hot water) heat distribution systems. However, one of the High School buildings and one UMFK building currently use steam. These steam distribution systems will be replaced with high efficiency hydronic distribution systems and hooked up to the new district heating plant.

### **B.6.a. Current Situation – Imminent Hazard of Heating with Oil**

The applicants seek additional points for imminent hazard / critical need based on both (1) the imminent environmental hazard of oil heating and steam heating, and (2) the financial, budgetary risk of heating with a fuel that has such an extremely unstable cost.

#### **B.6.a.i Environmental Hazard**

Transporting and using over 118,000 gallons of No. 2 distillate fuel oil to heat Project Facilities presents an imminent environmental hazard. The combustion of heating oil, a fossil fuel, produces greenhouse gases that enhance radiative forcing contributing to human induced global warming, which is causing the average surface temperature of the Earth to rise. A preponderance of scientific research finds that global warming has profound consequences for the Earth's complex biogeochemical systems. It is, for example, causing polar ice caps and alpine glaciers to melt and retreat, sea levels to rise, weather extremes including droughts and heat waves, saltwater intrusion in coastal aquifers, and biodiversity losses. Oil combustion produces not only greenhouse gases, but also other air pollutants, such as nitrogen oxides, sulfur dioxide, volatile organic compounds and heavy metals. Environmental damage is further caused during the extraction, refinement, and long distance transport of the oil in addition to the required combustion of diesel, and occasional oil leaks that contaminate land and water.

In addition to the economic and environmental disadvantages of oil, our nation's reliance on energy sources from unstable countries makes the U.S. and its allies less secure. Finally, it is not beneficial to the local economy of Fort Kent, which is in dire straights. For each dollar spent on oil, only a few cents remain in the local economy. A less expensive, environmentally-friendly, locally produced alternative to oil is urgently needed. Governor Baldacci recognized the imminent hazards of oil dependency and addressed this topic specifically in his 2008 State of the State Address.<sup>14</sup> Converting to

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<sup>14</sup> See Excerpts from Baldacci's State of the State 2008 Address, attached hereto.

carbon-neutral, ultra-low emissions, renewable biomass fuels for heating will put a stop to this environmental hazard.

Additionally, the conversion of steam to hot water heat for the Project Facilities that currently use steam heating will result in efficiency gains and greater reliability. High pressure steam systems are more prone to leaks and require more frequent and costly repairs that utilize caustic chemicals.

#### **B.6.a.ii Economic Risk - Critical Need and Imminent Hazard**

The price of heating oil is not only high, but also extremely volatile. Heating costs for the Project Facilities spiked to \$4.50/gal in 2007 and returned to between \$2.75 this past year – a difference of 63% in three years. Actual expenditures for fuel oil are unreliable, because many buildings were under-heated when oil was at its highest price level, as a cost savings measure. This can be seen by examining oil usage in different types of buildings during 2008/09, when oil prices were extremely high.<sup>15</sup> Oil usage for the gym, where students cannot wear outer clothes, was high in the cold winter of 2008/09, but extremely low in the main high school building, where students and teachers can wear sweaters and jackets. In the event that oil returns to the high prices of 2008/09, MSAD 27 will be unable to afford to heat properly. This hazard is all the more likely given our 3% budget reduction this year.



#### **B.6.a.iii Proposed Solution: Advantages of Heating with Biomass**

This effort will convert the Project Facilities to biomass fuels by financing the purchase and installation of a Skanden District Biomass Heating Plant. Converting to a central heating system fueled with locally-sourced, certified sustainable-yield wood chips offers the following benefits:

1. Lower cost.
2. Stable prices.
3. Supports the local economy, particularly local woodlot owners, loggers, truckers and chip operators.
4. Environmentally friendly (carbon neutral, ultra-low emissions, renewable, forest-friendly, local production minimizes environmental impact of transportation, etc.)
5. National security strengthened by reducing dependence on foreign oil.
6. Proven, low maintenance, trouble-free equipment.

<sup>15</sup> See oil consumption spreadsheet on page 38.



## 1. Lower Cost

The purchase and installation of biomass heating systems will reduce annual heating costs by more than 75%.

Wood chips in Fort Kent are available at varying moisture contents, but the most reliable are at approximately 40% moisture content at \$40/ton delivered. According to the National Renewable Energy lab website, one ton of wood chips at 40% moisture contain approximately 10,000,000 BTUs. According to US EIA, one gallon of fuel oil produces 138,690 BTUs. Thus, one ton of wood chips produce the same amount of energy as 72 gallons of No. 2 distillate fuel oil. At \$2.83/gal for number 2 fuel oil, 72 gallons cost \$204. Thus, at \$40/ton for wood and \$2.83/gallon for heating oil, wood chips produce an equivalent amount of energy at 20% of the price of heating oil. Converting from oil to wood chips, therefore, may result in savings of over 80% in the first year. Savings may actually be greater depending on the efficiency of the old oil boilers, the actual moisture content of the wood, and the actual oil and wood chip prices at the time the project launches. For the Project Facilities, which cost \$334,912 annually to heat (at \$2.83/gal) and with old oil-fired boilers that test at 80% efficiency, savings will be \$282,389 in the first year at today's oil price of \$2.83/gal.

If oil prices rise 10% per year, the price for heating oil for the next five years, and the amount spent by the Project Facilities on heating fuel would be:

<b>Year</b>	<b>Oil Price</b>	<b>Total Expenditures</b>	<b>Wood Chips</b>
2010/11	\$2.83	\$334,913	\$52,522
2011/12	\$3.11	\$368,404	\$52,522
2012/13	\$3.42	\$405,244	\$52,522
2013/14	\$3.76	\$445,768	\$52,522
2014/15	\$4.13	\$490,345	\$52,522
<b>Total</b>		<b>\$2,044,674</b>	<b>\$262,609</b>

This amount contrasts with a total of \$262,609 for five years of biomass fuel (1,313 tons per year at \$40/ton = \$52,522/year x 5 years = \$262,609) under a long term, fixed-price contract for wood chips from Seven Islands of Ashland, Maine or another local vender. Thus, converting to biomass heating yields a savings of up to \$1.8 million over five years.

## 2. Stable Prices

The price of wood is relatively stable. UMFK expects to secure a long-term contract for chips through Seven Islands of Ashland, Maine or another local vender for a fixed price of approximately \$40/ton. In the event that such prices increase dramatically in the distant future (a very unlikely event), the MultiFuel boiler can be converted to take other forms of biomass, such as wood and grass pellets, straw/grass bales, grains, and a variety of waste products. Agricultural biomass has great potential in the region, which has seen a sharp drop agricultural production. Today between 40 and 50% of agricultural land is out of production. Many farmers have expressed an interest in shifting to biomass crops.

Thus, the cost of fueling these systems is extremely stable and low compared with oil, which spiked to \$4.50/gal during the winter of 2007/2008.

### **3. Supports the Local Economy**

Aroostook County suffers from chronically low household income, high unemployment rates, and high poverty rates. With the recent closure of many forestry-related businesses, including sawmills, paper mills, pulp mills, and lumber companies, the local economy has suffered tremendously and unemployment spiked to over 11% at times during the past two years in the County (Maine Department of Labor 2010). The real picture of lost jobs is likely much greater than the unemployment rate reveals, however, because of the high rates of out-migration, especially by people of working ages. The 2010 census is expected to reveal a population for the county of slightly less than 70,000, a decline of 38% from the high of over 100,000 in the early 1960s. The northern portion of the county, referred to as the Valley (from the St. John River Valley) experienced a disproportionately larger loss than the county as a whole. The Valley covers more than half the County territory, but contains only 17,000 of the County's 70,000 residents.

This project, the first biomass heat system in the area, will prompt the development of a new industry, the biomass thermal industry. It will accomplish this by not only demonstrating the benefits of biomass heating, but, more importantly, training local electricians, piping specialists, engineers, and others in the installation and maintenance of biomass boilers and biomass storage/handling equipment. All local labor will be used to install the new heating system, including local labor for both the conversion from steam to hot water and the installation of the boiler and storage/handling systems. The training of these local specialists is an integral part of this project, which will help ensure continued economic growth for Aroostook County.

The nearly \$1.8 million savings over five years (detailed above) in energy costs will directly benefit the community by ensuring the long-term viability of UMFK and MSAD 27, both of which are critical to the long-term survival of the Town and indeed the St. John Valley region of northern Maine. Layoffs and furloughs have hit both institutions in recent years.

This project enjoys wide support from fuel suppliers to the Town of Fort Kent (see attached letters). Additionally, Mobilize Maine and the State government have identified biomass as priorities for the region for the following reasons:

- Savings to taxpayers by reducing the heating costs of public buildings;
- Retention of jobs at the public University and Schools due to the nearly \$1.8 million in five-year savings from reduced heating costs;
- Training that will be generated in areas related to biomass heating;
- Job creation and the development of a new biomass thermal industry;
- Benefit to wood lot owners and farmers, who will be able to sell their sustainably harvested fuels to UMFK;
- Reinvigoration of the regional forestry and agricultural economic sectors.

Several of the 20 or more individuals employed during the installation phase of the project will become trained in the field and will find gainful employment in this growing economic sector. The Northern Maine Medical Center plans to install a biomass boiler in the coming year and the U Maine Extension office has a grant proposal to expand pellet manufacturing in the region, which is expected also to stimulate the sector (see support letter from U Maine Extension).

Retaining dollars spent on energy locally will also result in economic stimulus through high first round economic multipliers.

The purchase and installation of these biomass heating systems will serve as a model for community biomass heating plants, as well as for commercial and institutional complexes. It will help insure new and future customers for regional farmers and truckers. This will provide a much needed boost to the depressed local economy.

#### **4. Environmentally Friendly**

The use of biomass heating benefits the environment in many ways:

- biomass grown with little fossil fuel input is as nearly carbon neutral as possible; the carbon released during combustion is reabsorbed by the growing plant material that will be used to heat later;
- ultra-low particulate emissions (particularly when burned in a Skanden MultiFuel system at approximately 2000 degrees and filtered with multi-cyclones) exceed EPA regulations (see attached EPA test results);
- renewable energy produced from wood derived from sustainable-yield forests can be used sustainably indefinitely;
- no risk of accidental contamination (such as from an oil spill/leak); and
- local production minimizes the environmental impact of transportation and the use of off-spec wood (tops and branches that are otherwise left to rot on the forest floor) minimizes forest fire risks and enjoys the support of the U.S. Forest Service;<sup>16</sup>
- will take UMFK far in meeting its climate neutrality commitment under the American College and University Presidents Climate Commitment, which requires climate neutrality by mid century or sooner.<sup>17</sup>
- surplus heat may be used to heat the UMFK greenhouse, which will be constructed on a site adjacent to where the proposed boiler will go. The current design of the greenhouse will extend the growing season for the organic vegetable growing greenhouse well into the fall, but it will need to close during the coldest months of the winter. By using surplus heat from the biomass boiler, the greenhouse could produce food throughout the winter.

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<sup>16</sup> The particularly forest-friendly nature of wood heating led to the development of "Fuel for Schools," a U.S. Forest Service program that promotes the use of woody biomass at schools.

<sup>17</sup> Operating with zero net fossil greenhouse gas emissions, which may be achieved by minimizing GHG emissions as much as possible and by using carbon offsets or other measures to mitigate the remaining emissions. [www.presidentsclimatecommitment.org/about/commitment-faq#5](http://www.presidentsclimatecommitment.org/about/commitment-faq#5)

### **5. Strengthens National Security**

Our national security is threatened by our dependence on foreign oil especially from unstable parts of the world. Switching to locally produced fuel strengthens America.

### **6. Proven Trouble-free Heating Systems**

Wood chips are used for heating by thousands of schools and other facilities throughout Europe. They are trouble-free and extremely easy to maintain. They require minimum maintenance, such as refilling the chip storage bin, emptying the ash bucket (ideally in a garden where it is beneficial for plants), checking the boiler tubes for ash build-up, and sweeping the chimney. The systems carry a 24 month warranty. Repairs for ordinary wear and tear are generally easy and infrequent.

## **B.6.b Project Design**

### **B.6.b.i. Wood Heating Systems**

Currently, most biomass systems available in the US are designed for low moisture premium wood pellets and debarked small paper quality chips. Low quality is more difficult. The ash content is higher, and it contains significant impurities. It has a tendency to form clinkers, slag, lava and glass. Ash builds up on the heat exchange tubes decreasing efficiency and increasing emissions. We will be using Skanden MultiFuel Systems, which were originally designed for and still used for unsorted municipal solid waste. MultiFuels can be equipped with wide diameter feeding augers and burners to accommodate larger chips. They have a moving step grate (shown, right), which breaks up the fuel before it can form clinkers, slag, lava or glass. They have an automatic ash removal screw and automatic pneumatic cleaning of the boiler tubes which keeps the heat exchange tubes clean so that heat exchange is maximized, efficiency is maximized, and emissions are minimal. Most importantly, MultiFuel boilers are made of non-corrosive stainless steel. MultiFuels have been produced in Denmark by Reka since the late 1970's. Most of their first systems are still used today for municipal solid waste.

Boilers purchased with grant funds will meet all US regulations, be installed according to plans drawn up by engineers, and installed by licensed HVAC installers. Independent lab reports confirm MultiFuel emissions to be less than half the EPA proposed limits for CO and PM.<sup>18</sup>

Skanden Energy will send a representative to supervise the installation and train local plumbers, mechanical contractors, and other specialists.

### **B.6.b.ii. Sizing**

Currently, most Project Facilities have two boilers, one being a redundant back-up boiler that is sometimes used on extremely cold days.

To accurately size the District Heating Plant boiler, it is necessary to know the total consumption of all Project Facilities and the peak load, or peak demand during the coldest times of the year. We, therefore, collected oil consumption data for recent years, took averages then looked at Heating Degree Days of a representative year in order to understand temperature fluctuations and the timing and duration of peak load periods.

Because boilers are most efficient when running at medium to full capacity, it is important to strike the right balance between meeting a high percentage of demand without over sizing the boiler. Because UMFK and MSAD 27 are retaining oil boilers in all its boiler rooms for 100% redundancy, the system will be able to rely on oil backup during unusually extreme cold. This will allow for the most efficient biomass boiler size

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<sup>18</sup> See attached email from the EPA converting European independent lab reports on Skanden MultiFuel boilers to the EPA standards and confirming that MultiFuel boilers meet the EPA proposed PM and CO limitations without filtration. Despite this, we will be installing a multicyclone filter.

to be selected for the project. 15% of all Heating Degree Days occur during the coldest 20 days of the year in a typical year in Fort Kent. A boiler sized to meet 100% of the rest of the year means that the boiler would meet most of the demand during the remaining coldest days. Therefore, the 20<sup>th</sup> coldest day was selected. For that day and at a rate of 118,000 gallons per year, a 1MW unit would meet 98.5% of the total load. With the efficiency gains made by the conversion of two buildings from steam to hot water, and the new boiler rated at 90% efficiency compared to the old oil boilers currently testing at 80% efficiency, the new system will provide enough Btus for 100% of load on all days of the year in most years.

#### **B.6.b.iii. Maintenance and Warranty**

The MultiFuel boiler comes with a 24-month warranty. Maintenance can be performed by the same people who maintain the old oil boilers. The system requires a daily inspection (typically about 5 minutes/day), periodic emptying of the ash bucket, periodic cleaning of boiler tubes (tubes are automatically cleaned pneumatically, but an additional manual cleaning is recommended periodically), and a thorough summer inspection and cleaning.

UMFK has a highly competent mechanical systems staff and out-sources contracted maintenance services. Once the project is completed, the Pleasant Street facilities heated with this system will be using one boiler as opposed to the 8 boilers currently in use. This fact will significantly reduce maintenance calls. The supplier is also capable of monitoring maintenance needs remotely via an internet connection. All personnel are professional and capable of maintaining a modern system that is utilized throughout Europe. In the event that the UMFk and/or MSAD 27 maintenance staff or contracted services have any questions or concerns, Skanden and Reka, the Danish manufacturer, as well as the contracted installer, will be able to assist.

#### **B.6.b.iv. Availability of Fuel**

Northern Maine historically has been an important center for the wood and paper industries and farming. Although both sectors are hurting today, they remain critical to the regional economy. What is more, with only 70,000 people in the largest county east of the Mississippi and nearly as large as Massachusetts, the region has vast supplies of standing biomass in trees and the potential to produce vast additional amounts on agricultural land. Managed sustainably, supplies will remain huge and prices should remain stable.

#### **B.6.b.v. Fiscal Agent**

UMFK will be the fiscal agent for purposes of this grant.

#### **B.6.b.vi. Installation and Equipment**

Equipment purchase is anticipated to be through Skanden Energy because of its experience with the preferred biomass boiler equipment in Maine schools. Skanden would subcontractor much work locally. Skanden's engineers, work with Reka, the Danish manufacturer of MultiFuel boilers, to customize engineering plans for installation. As fiscal agent, UMFK will oversee bidding for all contracts and subcontracts.

A brochure of the equipment is attached.

#### **B.6.b.vii. Demonstrated Experience**

##### **University of Maine at Fort Kent**

UMFK has demonstrated experience with district heating systems, sustainable yield forestry programs, biomass harvesting, and solid fuels. UMFK Facilities Director, Andrew Jacobs, previously worked for the University of Maine in Orono, which has a student body greater than ten times UMFK and has a district heating system. Although that system is oil fired, Mr. Jacobs has direct experience with the multiple building of a district heat system and has experience with solid fuels. The University also has a forestry program and much expertise with the local biomass industries. Adding training in the biomass fuels field will be a logical step for the institution to take. Recently, the CRSD at UMFK received a grant from the NSF-funded EPSCoR Sustainability Solutions Initiative program to assess the landscape implications of biomass harvesting in the region. Adding a biomass district heat system and attaching a research component to it would complement the EPSCoR project. The CRSD is also modeling the potential to optimally meet electricity demand with renewable energy resources. This project will complement those efforts.

##### **Skanden Energy**

Skanden is focused on helping communities reduce their carbon footprint and save money by converting to locally available biomass waste, sustainable yield wood fuels, and fuel crops. This enables facilities to spend their energy dollars at home, rather than on foreign fossil fuels. We use local subcontractors exclusively. Typically, Skanden sends one project manager with relevant skills (electrical, engineering, piping, or similar), who supervises and trains local subcontractors. In this manner, Skanden develops local expertise, so that future maintenance can be handled quickly and properly. This also helps grow Skanden, as local subcontractors find new projects that use Skanden equipment.

Skanden Energy's proposed lead project manager is an engineer with over 30 years of experience with hundreds of biomass boilers, including both thermal and power generation systems. He has supervised the planning and installation of many biomass boilers, including both pellet and wood chip boilers. In doing so, he works closely with factory engineers, develops plans for support structures and systems, selects, trains and

oversees contractors; and is responsible for maintaining project schedule and quality control. Areas of expertise include developing program logic controls, installing hydraulic delivery systems, and installing pneumatic and auger feed systems.

### **B.6.c. Regulatory and Other Approvals**

Installation will be performed by licensed HVAC installers, plumbers and electricians according to plans drawn up by Skanden Energy and Reka. All local, state, and federal building, plumbing, electrical and other code and regulations, will be complied with.

Under Maine Air Regulations Chapter 115, there are no emission control or licensure requirements for heating systems under 10 million BTUs. Our equipment meets or exceeds emissions and environmental requirements in all of the EU countries as well as many other nations.

Currently, there are proposed EPA regulations limiting PM and CO emissions from biomass boilers. MultiFuel boilers have never been tested using the proposed EPA methodology. However, we have sent our independent European laboratory results to the EPA, and they have confirmed that our results are well below the PM and CO limits.<sup>19</sup>

Central heating equipment is regulated by two State Boards, (1) the Board of Boilers and Pressure Vessels, and (2) the Board of Oil and Solid Fuels. Skanden has experience dealing with and meeting all the requirements of these two State Boards.

We will contract with licensed technicians who will be required to follow all Maine and national requirements.

### **B.6.d. Goals of the Project and Performance Measures**

This project has numerous goals, including:

- Achieve lower, more stable heating costs.
- Reduce the environmental damage caused by oil heating.
- Encourage other schools and facilities to use MSAD 27 as a model for conversion to biomass heating.
- Stimulate the economy by using locally produced biomass fuel.
- Reduce American dependence on foreign oil and strengthen our national and energy security.

We will assess achievement of these goals as follows.

#### **Goal 1**

UMFK and MSAD 27 will maintain records of heating oil consumption and costs for the last three heating seasons (2007-10) when No. 2 and No. 6 distillate were used, and for

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<sup>19</sup> See attached email from EPA.



the first three full heating seasons in which wood is used. We will use this data, as well as EIA data regarding oil prices, to prepare a report that will show how much money was saved in each of the three years wood chips were first utilized.

#### Goal 2

We will also use this data to determine and report on the reduction of CO2 resulting from the conversion from fossil fuel to green energy.

#### Goals 3-5

Significant progress toward the last goals can only be met if other schools follow our lead. There are currently no biomass district heating systems in Maine fueled with wood chips. We will encourage other schools and other types of facilities to consider wood heating and offer them tours of our new Biomass District Heating Plant. We will work with the state to track conversion to biomass heating systems in Maine. We will also track the number of tons of chips consumed by these facilities. We will use this data to prepare a report showing (1) the number of Maine facilities that convert, including boiler size and past oil consumption, (2) the number of other facilities that convert, (3) the importance of our project to the local economy and (4) the resulting reduction in the amount of oil consumed in Maine.

Our reports will not only be sent to the USDA, but they will also be available to the entire U Maine community. It is anticipated that our reports will spark additional research into combustion, biomass energy content, emissions, and similar.

### **B.6.e. Proposed Project Budget**

#### **B.6.e.i. Budget Narrative**

The total cost of this project is \$2,617,560, plus \$92,324 in in-kind contributions by UMFK and MSAD 27. The applicant will be paying \$290,840 of the total cost, for a total local contribution of \$383,164. We are requesting \$2,617,560 from the USDA Rural Development High Energy Cost Grant Program to cover the remaining amount.

**B.6.e.ii. Budget Spreadsheet:** the proposed budget spreadsheet follows on the next page.

**B.6.e.iii. The SF-424A form, "Budget Information- Construction Programs,"** follows on Page 24.

### B.6.e.i. Budget Spreadsheet

PLEASANT STREET ACADEMY BIOMASS DISTRICT HEATING SYSTEM PROPOSED BUDGET FOR CONVERTING UMFK & MSAD 27 SCHOOLS TO BIOMASS HEATING				
	Subtotals	Contractual Cost	UMFK & SAD 27 In-kind	Totals
<b>Skanden MultiFuel Heating System</b>		\$654,000		\$654,000
multicyclone, ash removal, etc. (assuming exchange rate of \$1 US = 5.7-6 DKK)	\$724,000			
Moving Wedge Floor with Hydraulic Discharge System and 5m Feeding Augers	\$168,000			
Chimney	\$14,000			
Freight and insurance from Europe	\$23,000			
Modifications to existing structure to use them as boiler house and chip storage		\$220,000		\$220,000
Installation, including Plumbing hook-ups to 8 existing boiler rooms @ \$50,000 per hook-up 3800' underground PEEX piping @ \$200/R Electrical, electronics, control panel, internet, etc within new boiler house Construction Management Engineer Plumbing HVAC branching		\$1,290,000		\$1,290,000
Installation labor provided by schools, incl: UMFK VP Admin & Finance 15 weeks 5% \$2,016 UMFK Dir. Facilities Management 18 weeks 25% \$6572 UMFK Mechanical Trade Supervisor 15 weeks 50% \$6575 UMFK Carpenter 18 weeks 10% \$1,374 SAD Head Custodian 100 hours @ \$25/hr \$4000			\$23,240	\$23,240
Conversion from steam to hot water for portions of UMFK buildings and half the High School		\$150,000		\$150,000
Misc. (permits, rigging, etc.)		\$10,000		\$10,000
UMFK projects related to the system (efficiency testing, coordination with farm program and sustainability department, video, etc.)			\$20,000	\$20,000
Emissions Testing		\$10,000		\$10,000
Evaluation / Reporting			\$10,000	\$10,000
Legal		\$10,000	\$10,000	\$20,000
<b>Subtotals</b>		\$2,844,000	\$63,240	\$2,907,240
10% Contingency		\$284,400		\$284,400
F&A @ 1%			\$29,084	\$29,084
<b>Total Cost of Project (contractual and in-kind)</b>		<b>\$2,908,400</b>	<b>\$92,324</b>	<b>\$3,000,724</b>
10% Cash contribution by UMFK and MSAD 27		\$290,840		
<b>Total amount of grant sought</b>		<b>\$2,617,560</b>		<b>\$2,617,560</b>
<b>Total amount of match</b>		<b>\$290,840</b>	<b>\$92,324</b>	<b>\$383,164.0</b>
NOTE: If a lesser amount of funding is available, we can curtail the scope of the project by hooking up to fewer buildings, thereby reducing the cost of underground piping and of hook-ups				
Five-year savings = nearly \$1.8 million based on 10% annual increase and year-1 price of \$2.03.				
Match as percentage of amount requested =		<b>13.2%</b>		
Match as percentage of total project =		<b>12.8%</b>		

**B.6.e.i. The SF-424A form, "Budget Information- Construction Program."**

BUDGET INFORMATION - Non-Construction Programs						
SECTION A - BUDGET SUMMARY						
Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		Total (g)
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	
1. High Energy Cost Grant	10-559	\$	\$	\$ 2,617,500	\$ 263,164	\$ 3,000,724
2.						
3.						
4.						
5. Totals		\$	\$	\$	\$	\$
SECTION B - BUDGET CATEGORIES						
6. Object Class Categories	GRANT PROGRAM FUNCTION OR ACTIVITY					
	(1) SALARY	(2)	(3)	(4)	Total (5)	
a. Personnel	\$	\$	\$	\$	\$	
b. Fringe Benefits						
c. Travel						
d. Equipment	554,000					
e. Supplies						
f. Contractual	1,290,000					
g. Construction	370,000					
h. Other	294,400					
i. Total Direct Charges (sum of (a)-(h))	2,908,400					
j. Indirect Charges (in kind)	92,324					
k. TOTALS (sum of (i) and (j))	\$ 3,000,724	\$	\$	\$	\$	
7. Program Income		\$ N/A	\$	\$	\$	

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B.6.e.i. The SF-424A form, "Budget Information- Construction Program. (2 of 2)"

SECTION C - NON-FEDERAL RESOURCES					
(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) TOTALS	
8. High Energy Cost Grant	\$ 303,164	\$	\$	\$ 303,164	
9.					
10.					
11.					
12. TOTAL (sum of lines 8-11)	\$ 303,164	\$	\$	\$ 303,164	
SECTION D - FORECASTED CASH NEEDS					
Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	
13. Federal	\$ 1,000,000	\$ 1,595,560	\$ 50,000	\$ 5,000	\$ 5,000
14. Non-Federal	100,000	104,840	5,000	1,000	1,000
15. TOTAL (sum of lines 13 and 14)	\$ 1,100,000	\$ 1,700,400	\$ 55,000	\$ 10,000	\$ 10,000
SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT					
(a) Grant Program	FUTURE FUNDING PERIODS (Years)				
	(b) First	(c) Second	(d) Third	(e) Fourth	
16. High Energy Cost Grant	\$ 2,905,400	\$ 00	\$ 00	\$ 00	\$ 00
17.					
18.					
19.					
20. TOTAL (sum of lines 16-19)	\$ 2,905,400	\$ 00	\$ 00	\$ 00	\$ 00
SECTION F - OTHER BUDGET INFORMATION					
21. Direct Charges:					
22. Indirect Charges:					
23. Remarks:					

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## **Part B.7. Supplementary Materials**

The supplements include:

- |   |      |
|---|------|
| a. Letter from Andrew Plant of U Maine Cooperative Extension.                                       | P.27 |
| b. Letter from Don Guimond, Fort Kent Town Manager.   | p.28 |
| c. Letter from Patrick O'Neill, Superintendent of MSAD 27.  | P.29 |
| d. Skanden Energy MultiFuel brochure.   | P.30 |
| e. Email from the EPA, confirming that the proposed boiler exceeds proposed EPA boiler regulations. | P.34 |
| f. Site Map   | p.37 |
| g. Oil consumption spreadsheet  | p.38 |

B.7.a. Letter from Andrew Plant of U Maine Cooperative Extension.



*Putting knowledge to work with the people of Maine*

Aroostook County Office-Bellevue  
P.O. Box 6  
Bellevue, ME 04730  
(207) 533-4548, 1-800-287-1469  
(Fax) (207) 533-4549  
Email: [aplant@umext.umaine.edu](mailto:aplant@umext.umaine.edu)

President Wilson G. Hess  
University of Maine at Fort Kent,  
Superintendent Patrick H. O'Neill  
M.S.A. D. #27;  
Brian Kermath  
Center for Rural Sustainable Development

August 31, 2010

To whom it may concern:

As part of my education and research responsibilities, I conduct trainings and provide counsel to Aroostook County citizens regarding energy conservation, efficiency, and alternatives. I fully support the University of Maine at Fort Kent's proposal for a district heating plan utilizing locally grown and processed biomass. Recently identified by the Maine State Chamber of Commerce's "Making Maine Work" assessment of local barriers to business development, energy expenditures were ranked second out nineteen identified priorities. Alternative resources for thermal and electrical energy production need to be researched, developed, and demonstrated in Maine. The proposal submitted by the University of Maine at Fort Kent is a tremendous start to stimulating thought and action around the state.

Sincerely,

Andrew B. Plant  
Assistant Professor  
University of Maine  
Cooperative Extension

[www.umext.maine.edu](http://www.umext.maine.edu)

The University of Maine and the U.S. Department of Agriculture cooperating.  
Cooperative Extension provides equal opportunities in programs and employment.  
*A Member of the University of Maine System*

B.7.b. Letter from Don Guimond, Fort Kent Town Manager.



Town Of/Municipalité de  
**Fort Kent**

416 West Main Street, Fort Kent, ME 04743-1040

Phone/Téléphone: (207) 834-3090

(207) 834-3136

Fax/Télécopieur: (207) 834-3126

[www.fortkent.org](http://www.fortkent.org)

August 31, 2010

To Whom It May Concern:

The Town of Fort Kent would like to express its support of the Pleasant Street District Heating Project – a project that will link educational facilities with a common heating plant.

The Town will also strongly consider linking municipal park facilities to the system as budget conditions will allow.

We enthusiastically support this project since it could serve as a catalyst for other businesses in the area to consider alternative, renewable options for their energy needs. Of equal importance is the positive impact that the heating plant will have by utilizing local resources to meet the academic community's heating requirements.

Finally, the Town is also excited about this project since it underscores the on-going commitment the University of Maine at Fort Kent and School Administrative District 27 has to the region. An investment of this nature sends a positive message to everyone in the St. John Valley.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read "Donald Guimond".

Donald Guimond  
Town Manager

The Town of Fort Kent is an Equal Opportunity Provider and Employer.  
Complaints of Discrimination should be sent to USDA, Director, Office of Civil Rights, Washington, D.C. 20250-3410 or call  
(800) 795-3272 (voice) or (202) 720-6382 (TDD).

B.7.c. Letter from Patrick O'Neill, Superintendent of MSAD 27.

NO. 96 ST. JOHN VALLEY AOS—(CENTRAL OFFICE FOR MSAD NO 10 & 27)  
84 PLEASANT STREET STE. 1 FORT KENT, ME 04745 TEL. (207)834-5189

Patrick H. O'Neill  
Superintendent of Schools

Lucia Falar  
Director of Finance & Projects

August 31, 2010

U.M.F.K.  
President Hess  
23 University Drive  
Fort Kent, ME 04743

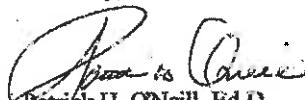
Dear President Hess and Center Director Brian Kermath,

It is with great support and enthusiasm that M.S.A.D. NO. 27 partners with the University of Maine at Fort Kent to secure funding for a recent grant proposal from the United States Department of Agriculture in creating a biomass fuel plant to deliver energy to each of our facilities on Pleasant Street.

Allowing a means to purchase wood chip heat from the University and divert this energy source to two of our facilities on Pleasant Street, (Community High School and Fort Kent Elementary School/Valley Rivers Middle School) is truly a step in the right direction. This natural resource, (wood) is in our community and this project will create jobs, save our school district money on fuel consumption and help us become more efficient with our energy use during a time of financial hardship.

The potential of growing this project over the next several years is great as other school districts and institutions will be watching how well this project unfolds.

Sincerely,

  
Patrick H. O'Neill, Ed.D.  
Superintendent of Schools

PHO/pb

All Schools Accredited by New England Association of Schools & Colleges. Ailgash,  
Eagle Lake—Fort Kent—New Canada—St. Francis—St. John—Wallagrass—Winterville

\\shared\Patrick\Letter\UMFK Energy Grant 2010-10.doc



B.7.d. Skanden Energy MultiFuel brochure.



## The Next Generation of Heating Technology

**Skanden**  
Local, renewable energy made easy.

## Imagine the Next Generation of Heating Technology

"Skanden Energy continues to demonstrate a remarkable commitment to this project,.... they are a reliable team and an excellent company to work with."

Quentin Clark  
Superintendent of Maine School Administrators District 01

### It's Here Today

Environmentally friendly  
Ultra-low emissions  
Over 90% efficient  
Easy maintenance  
Proven reliability  
Lower and more stable fuel costs

### Skanden Multifuel Heating System

A Skanden Multifuel Heating System is environmentally friendly, over 90% efficient and easy to use. It cleans itself automatically, and can be controlled via the Internet. Instead of buying fossil fuels, it combusts locally produced inexpensive biomass of up to 50% moisture. Converting to a Skanden Multifuel Heating System will cut your heating bills and earn you carbon credits. You will also be able to buy your fuel locally, which creates jobs in your community, generates tax revenue and stimulates the local economy.

### Scandinavian Technology- World leaders in Biomass

Our MultiFuel Heating Systems are based on Danish technology developed by Boka, the



**MultiFuel (340,000- 20,000,000 BTU/h)**  
Also available in 14,000-100,000 Btu/h

world leader in biomass heating. Boka's biomass gasification heating system, first introduced in 1979, led Scandinavia to convert to over 50% biomass heating. Since 1979, Boka has continued perfecting their combustion and fuel feeding technology. They hold dozens of patents in the field. In 2000, Boka obtained all necessary approvals for the U.S. market, including the ASME stamp. Skanden has exclusive U.S. rights for Boka equipment.

### Fuels



Pellets



Straw/Gear



Wood Chips



Agriwood/Waste

### Advanced Technology Increases Efficiency, Lowers Emissions and Eases Maintenance

All aspects of combustion are precisely controlled to maximize efficiency, minimize emissions and ease maintenance. Fluegassing from oxygen level, to exhaust, is regulated to maintain combustion at 2000°. This ensures that all energy is utilized and not released up the stack in the form of harmful emissions. Biomass fuel is fed in through the front, entering uniform combustion, and gasified on a large moving step grate, minimizing the formation of slag, glass, and blockage. Ashes are automatically removed and deposited in a large ash container adjacent to the boiler. Our unique 4-pass design forces hot gases past heat exchange tubes four times, three of which are convection passes, maximizing heat transfer and efficiency. Boiler tubes are continually cleaned pneumatically (compressed air). A thorough cleaning is still recommended every summer, but our large doors make cleaning a snap.

### Biomass Heating: An Investment in Your Community

An investment in a Skanden Heating System is an investment in your community. Skanden trains local contractors, building their expertise so they can distribute



*Boiler tubes are cleaned pneumatically*

*Moving step grate breaks up difficult fuels and prevent the formation of ash, slag and lava*

*Automatic ash removal system deposits the ash in an adjacent ash container (not down)*

### MultiFuel Mini (68,000 BTUs)

and install our equipment. Money spent on biomass fuel remains in the community, creating local jobs (for truckers, chipping operators, property owners and others involved with fuel supply), generating tax revenue, and stimulating the local economy.

### Fuel Costs

Fuel Type	Price/Unit	BTU/Unit	\$/Mill BTUs
Electricity	\$0.10/kwh	3,412	\$05.17
Propane	\$2.4/gal	91,300	\$21.80-\$45.00
#2 Oil	\$2.4/gal	138,500	\$14.42-\$28.24
Natural Gas	\$1.25/therm	100,000	\$12.50
Wood Pellet	\$175/ton	16,500,000	\$10.61
Wood Chip	\$40/ton	3,000,000	\$4.04
Waste	Free	Varies	Free

## Customized Total Solutions

A Skanden Heating System is not just the most advanced boiler available. It is a total customized solution, comprised of fuel storage and feeding mechanisms, biomass boilers, exhaust system filtration and chimneys.



*Hydraulically actuated Storage Systems for wood chips*

### Fuel Feeding and Storage

Skanden offers different types of storage bins and feeding mechanisms, to accommodate pellets, wood chips, switch grasses, waste products, and other biomass. We offer a hydraulic live floor fuel discharge systems for wood chips. We have equipment that reliably cuts grasses and straw and feeds it into augers. Our pellet silos can be custom painted to match adjacent architecture.



*Green Cutter and Feeding System for cutting and feeding switch grasses, miscanthus, arundo, and similar crop biomass*



*Pellet Silo*

Complete Biomass Heating Solution including hydraulic live floor fuel discharge system for efficient delivery and combustion of wood chips, pellets, wood shavings, nut shells, straw and grasses. (Other fuel handling systems available)

A. Live Floor	F. Fuel Screen
B. Live Floor Discharge Screw	G. Primary and Secondary Air
C. In-line Auger	H. Mixing Auger & Under Fire Air
D. Firewall	I. Fire Tubes
E. Rotary Air Lock	J. Automatic Ash Removal System

B.7.e. Email from EPA, confirming that the proposed boiler exceeds proposed EPA regulations.

## Stack Test Report

Fuel	Load	Heat Output		PM (Heat Input)		CO (Heat Input)	
		kW	MMBtu/hr	Mg/MJ	Lb/MMBtu	mg/m <sup>3</sup>	Ppmdv @7% O <sub>2</sub>
Pellets	Nominal	59	201,000	10	0.02	22	24
Chips	Nominal	55	188,000	10	0.02	32	35
Pellets	Lowest	17	58,000	NT	NT	567	620
Chips	Lowest	16	55,000	NT	NT	1,130	1,235

NT = Not Tested

The proposed Area Source Boiler MACT limits for this size unit burning biomass are 0.03 lb/MMBtu for PM and 100 ppmdv @ 7% O<sub>2</sub> for CO. This unit could meet the proposed limits at nominal load, but not at low load. Performance testing under the proposed MACT rules would be done at maximum normal operating load, so this unit should test be in compliance.

The European test method for PM does not include condensables, but it doesn't really matter because units operating at high combustion efficiencies don't emit much for condensables.

**E-mail message from:** Eric Kennedy, Engineer  
**Sent to Supervisor James P. Brooks:** Wednesday, July 14, 2010 2:37 PM

Forwarded by Supervisor:  
 James P. Brooks  
 Director, Bureau of Air Quality  
 Maine Department of Environmental Protection  
 17 State House Station  
 Augusta, Maine 04333  
 (207) 287-7044  
[james.p.brooks@maine.gov](mailto:james.p.brooks@maine.gov)

----- Forwarded message -----

**From:** Brooks, James P <[James.P.Brooks@maine.gov](mailto:James.P.Brooks@maine.gov)>

**Date:** Fri, Jul 23, 2010 at 6:02 PM

**Subject:** FW: Lab results confirm that Reka boilers satisfy the proposed EPA regulations

**To:** Andrew Plant <[aplant@maine.edu](mailto:aplant@maine.edu)>

Andrew,

One of my engineers did this calculation for me.

James P. Brooks  
Director, Bureau of Air Quality  
Maine Department of Environmental Protection  
17 State House Station  
Augusta, Maine 04333  
(207) 287-7044  
[james.p.brooks@maine.gov](mailto:james.p.brooks@maine.gov)

---

**From:** Kennedy, Eric

**Sent:** Wednesday, July 14, 2010 2:37 PM

**To:** Brooks, James P

**Subject:** RE: Lab results confirm that Reka boilers satisfy the proposed EPA regulations

Jim, this is what I gathered from reading the stack test report.

Fuel	Load	Heat Output		PM (Heat Input)		CO (Heat Input)	
		kW	MMBtu/hr	Mg/MJ	Lb/MMBtu	mg/m <sup>3</sup>	Ppmdv @ 7% O <sub>2</sub>
Pellets	Nominal	59	201,000	10	0.02	22	24
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Pellets	Lowest	17	58,000	NT	NT	567	620
Chips	Lowest	16	55,000	NT	NT	1,130	1,235

NT = Not Tested

The proposed Area Source Boiler MACT limits for this size unit burning biomass are 0.03 lb/MMBtu for PM and 100 ppmdv @ 7% O<sub>2</sub> for CO. So, it looks like this unit could meet the proposed limits at nominal load, but not at low load. Performance testing under the proposed MACT rules would be done at maximum normal operating load, so I agree that this unit should test in compliance.

The European test method for PM does not include condensables, but I remember now that it doesn't really matter because units operating at high combustion efficiencies don't emit much for condensables.

Let me know if you need anything else.

Eric

-----Original Message-----

From: Brooks, James P

Sent: Wednesday, July 14, 2010 10:39 AM

To: Kennedy, Eric

Subject: FW: Lab results confirm that Reka boilers satisfy the proposed EPA regulations

James P. Brooks

Director, Bureau of Air Quality

Maine Department of Environmental Protection

17 State House Station

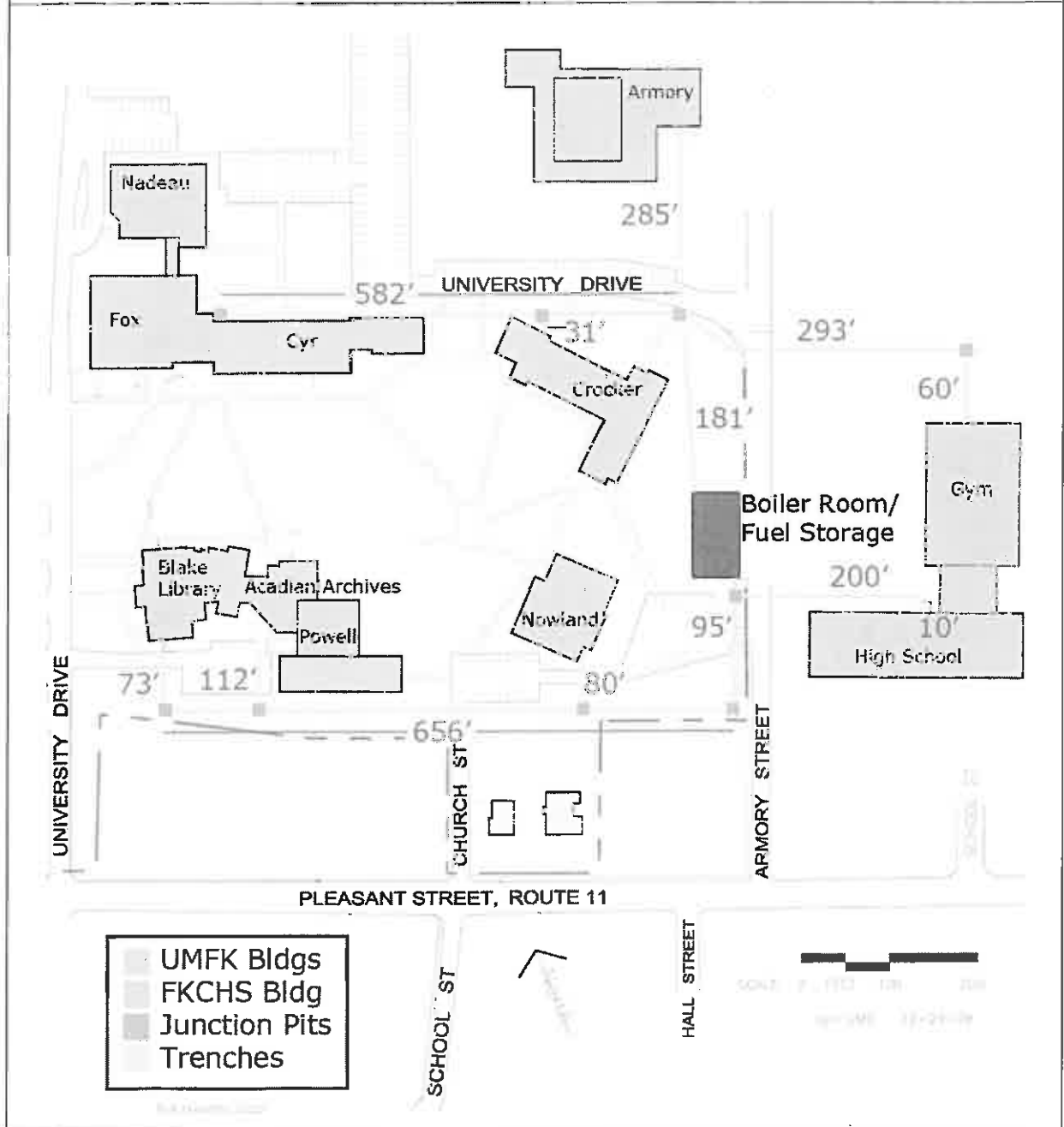
Augusta, **Maine 04333**

(207) 287-7044

[james.p.brooks@maine.gov](mailto:james.p.brooks@maine.gov)

B.7.f. Site Map

# Pleasant Street Academy Biomass Boiler Project Fort Kent, Maine





B.7.g. Oil consumption spreadsheet

Annual oil consumption and costs for the Project Facilities of the Pleasant Street Academy and comparison with wood chips equivalents.

Building	Gallons Oil*	Annual Oil Cost	Annual Btus	Wood Chips Tons	Annual Cost Wood Chips	Year-1 Savings
Crocker Hall	13,475	\$38,133	1,495,044,914	150	\$5,980	
Blake Library	6,437	\$18,217	714,198,024	71	\$2,857	
Powell Hall-Acadian Archives	5,113	\$14,470	567,297,576	57	\$2,269	
Nowland Hall	14,123	\$39,968	1,566,975,096	157	\$6,268	
Armory	20,007	\$56,620	2,219,816,664	222	\$8,880	
Cyr-Fox-Nadeau	26,964	\$76,308	2,991,709,728	299	\$11,967	
<b>Subtotal</b>	<b>86,119</b>	<b>\$243,716</b>	<b>9,555,042,002</b>	<b>956</b>	<b>\$38,221</b>	<b>\$205,494</b>
High School, Main	14,872	\$42,088	1,650,078,144	165	\$6,601	
High School, Gym	17,353	\$49,109	1,925,350,056	193	\$7,702	
	32,225	\$91,197	3,575,428,200	358	\$14,302	\$76,895
<b>Grand Total</b>	<b>118,344</b>	<b>\$334,913</b>	<b>13,130,470,202</b>	<b>1,313</b>	<b>\$52,524</b>	<b>\$282,389</b>

\* Note: Averages for UMFK are from the past five years, and 3 years for the Community High School.

**Part C. Additional Required Forms and Certifications**

- |   |      |
|---|------|
| 1. SF-424B, Assurances - "Non-Construction Programs"  | p.40 |
| 2. SF-LLL, "Disclosure of Lobbying Activities"  | p.42 |
| 3. "Certification Regarding Debarment, Suspension and Other<br>Responsibility Matter- Primary Covered Transactions" | p.43 |
| 4. Environmental Profile  | p.44 |

## C.1. SF-424B, Assurances - "Non-Construction Programs"

OMB Approval No. 3248-0042

### ASSURANCES - CONSTRUCTION PROGRAMS

Public reporting burden for this collection of information is estimated to average 15 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (3248-0042), Washington, DC 20503.

**PLEASE DO NOT RETURN YOUR COMPLETED FORM TO THE OFFICE OF MANAGEMENT AND BUDGET. SEND IT TO THE ADDRESS PROVIDED BY THE SPONSORING AGENCY.**

**NOTE:** Certain of these assurances may not be applicable to your project or program. If you have questions, please contact the Awarding Agency. Further, certain Federal assistance awarding agencies may require applicants to certify to additional assurances. If such is the case, you will be notified.

As the duly authorized representative of the applicant, I certify that the applicant:

1. Has the legal authority to apply for Federal assistance and the institutional, managerial and financial capability (including funds sufficient to pay the non-Federal share of project costs) to ensure proper planning, management and completion of the project described in this application.
2. Will give the awarding agency, the Comptroller General of the United States and, if appropriate, the State, through any authorized representative, access to and the right to examine all records, books, papers, or documents related to the assistance and will establish a proper accounting system in accordance with generally accepted accounting standards or agency directives.
3. Will not dispose of, modify the use of, or change the terms of the real property title, or other interest in the site and facilities without permission and instructions from the awarding agency. Will protect the Federal interest in the title of real property in accordance with awarding agency directives and will include a covenant in the title of real property acquired in whole or in part with Federal assistance funds to assure non-discrimination during the useful life of the project.
4. Will comply with the requirements of the assistance awarding agency with regard to the drafting, review and approval of construction plans and specifications.
5. Will provide and maintain competent and adequate engineering supervision at the construction site to ensure that the complete work conforms with the approved plans and specifications and will furnish progress reports and such other information as may be required by the assistance awarding agency or State.
6. Will initiate and complete the work within the applicable time frame after receipt of approval of the awarding agency.
7. Will establish safeguards to prohibit employees from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest, or personal gain.
8. Will comply with the Intergovernmental Personnel Act of 1970 (42 U.S.C. §§4708-4709) relating to prescribed standards for merit systems for programs funded under one of the 18 statutes or regulations specified in Appendix A of OPM's Standards for a Merit System of Personnel Administration (5 C.F.R. 600, Subpart F).
9. Will comply with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. §§4801 et seq.) which prohibits the use of lead-based paint in construction or rehabilitation of residential structures.
10. Will comply with all Federal statutes relating to non-discrimination. These include but are not limited to: (a) Title VI of the Civil Rights Act of 1964 (P.L. 88-352) which prohibits discrimination on the basis of race, color or national origin; (b) Title IX of the Education Amendments of 1972, as amended (20 U.S.C. §§1681-1683, and 1685-1686) which prohibits discrimination on the basis of sex; (c) Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. §794), which prohibits discrimination on the basis of handicap; (d) the Age Discrimination Act of 1975, as amended (42 U.S.C. §§6101-6107), which prohibits discrimination on the basis of age; (e) the Drug Abuse Office and Treatment Act of 1972 (P.L. 92-255), as amended, relating to nondiscrimination on the basis of drug abuse; (f) the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L. 91-616), as amended, relating to nondiscrimination on the basis of alcohol abuse or dependence; (g) §§526 and 527 of the Public Health Service Act of 1944 (42 U.S.C. §§595 (a)-5 and 240 (a)-5), as amended, relating to confidentiality of alcohol and drug abuse patient records; (h) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §§801 et seq.), as amended, relating to nondiscrimination in the sale, rental or financing of housing; (i) any other nondiscrimination provisions in the specific statute(s) under which application for Federal assistance is being made; and (j) the requirements of any other nondiscrimination statute(s) which may apply to the application.

**C.1. SF-424B, Assurances - "Non-Construction Programs" (2 of 2)**

11. Will comply, or has already complied, with the requirements of Titles II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-645) which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal and federally-assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases.
12. Will comply with the provisions of the Hatch Act (5 U.S.C. §§1501-1508 and 7324-7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.
13. Will comply, as applicable, with the provisions of the Davis-Bacon Act (40 U.S.C. §§2706a to 2706a-7), the Copeland Act (40 U.S.C. §276c and 18 U.S.C. §374), and the Contract Work Hours and Safety Standards Act (40 U.S.C. §§327-333) regarding labor standards for federally-assisted construction subagreements.
14. Will comply with flood insurance purchase requirements of Section 102(a) of the Flood Disaster Protection Act of 1973 (P.L. 93-234) which requires recipients in a special flood hazard area to participate in the program and to purchase flood insurance if the total cost of insurable construction and equipment is \$10,000 or more.
15. Will comply with environmental standards which may be prescribed pursuant to the following: (a) installation of environmental quality control measures under the National Environmental Policy Act of 1969 (P.L. 91-150) and Executive Order (EO) 11514; (b) notification of violating facilities pursuant to EO 11738; (c) protection of wetlands pursuant to EO 11650; (d) evaluation of flood hazards in floodplains in accordance with EO 11988; (e) assurance of project consistency with the approved State management program developed under the Coastal Zone Management Act of 1972 (16 U.S.C. §§1651 et seq.); (f) conformity of Federal actions to State (Clean Air Implementation Plans under Section 176(c) of the Clean Air Act of 1955, as amended (42 U.S.C. §§7401 et seq.); (g) protection of underground sources of drinking water under the Safe Drinking Water Act of 1974, as amended (P.L. 93-525); and, (h) protection of endangered species under the Endangered Species Act of 1973, as amended (P.L. 93-203).
16. Will comply with the Wild and Scenic Rivers Act of 1968 (16 U.S.C. §§1271 et seq.) related to protecting components or potential components of the national wild and scenic rivers system.
17. Will assist the awarding agency in assuring compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. §470), EO 11650 (identification and protection of historic properties), and the Archaeological and Historic Preservation Act of 1974 (16 U.S.C. §§480a-1 et seq.).
18. Will cause to be performed the required financial and compliance audits in accordance with the Single Audit Act Amendments of 1996 and OMB Circular No. A-133, "Audits of States, Local Governments, and Non-Profit Organizations."
19. Will comply with all applicable requirements of all other Federal laws, executive orders, regulations, and policies governing this program.

SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL 	TITLE Vice President, Administration
APPLICANT ORGANIZATION University of Maine at Fort Kent	DATE SUBMITTED 9/8/10


SF-424B (Rev. 7-97) Back

**C.2. SF-LLL, "Disclosure of Lobbying Activities"**

**DISCLOSURE OF LOBBYING ACTIVITIES**

Complete this form to disclose lobbying activities pursuant to 51 U.S.C. 1353  
(See reverse for public burden disclosure.)

Approved by OMB  
0348-0045

<b>1. Type of Federal Action:</b> <input type="checkbox"/> a. contract <input type="checkbox"/> b. grant <input type="checkbox"/> c. cooperative agreement <input type="checkbox"/> d. loan <input type="checkbox"/> e. loan guarantee <input type="checkbox"/> f. loan insurance		<b>2. Status of Federal Action:</b> <input type="checkbox"/> a. bid/offer/application <input type="checkbox"/> b. initial award <input type="checkbox"/> c. post-award		<b>3. Report Type:</b> <input type="checkbox"/> a. initial filing <input type="checkbox"/> b. material change <b>For Material Change Only:</b> year _____ quarter _____ date of last report _____	
<b>4. Name and Address of Reporting Entity:</b> <input checked="" type="checkbox"/> Prime <input type="checkbox"/> Subawardee Tier _____ <i>If known:</i> University of Maine at Fort Kent 23 University Drive Fort Kent, ME 04743 Congressional District <i>if known:</i> 02			<b>5. If Reporting Entity in No. 4 is a Subawardee, Enter Name and Address of Prime:</b>  Congressional District <i>if known:</i>		
<b>6. Federal Department/Agency:</b> United States Department of Agriculture			<b>7. Federal Program Name/Description:</b> Rural Development High Energy Cost Grant CFDA Number <i>if applicable:</i> 16-859		
<b>8. Federal Action Number, if known:</b>			<b>9. Award Amount, if known:</b> \$		
<b>10. a. Name and Address of Lobbying Registrant</b> <i>(If individual, last name, first name, MI)</i>  None			<b>b. Individuals Performing Services</b> <i>(including address if different from No. 10a)</i> <i>(last name, first name, MI)</i> N/A		
<b>11.</b> <small>Information reported through this form is authorized by law, 51 U.S.C. Section 1353. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by direct or indirect action upon the Government and may be subject to audit. This disclosure is required pursuant to 51 U.S.C. 1353. This information will be reported to the Congress and publicly and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each violation.</small>			Signature:  Print Name: John B. Murphy Title: Vice President for Administration Telephone No.: 207-634-7519      Date: 02/07/10		
<b>Federal Use Only:</b>					Authorized for Local Reproduction Standard Form 111 (Rev. 7-97)

PRINT

**C.3. "Certification Regarding Debarment, Suspension and other Responsibility Matter- Primary Covered Transactions"**

**United States Department of Agriculture  
Rural Utilities Service**

***Certification Regarding Debarment, Suspension, and Other  
Responsibility Matters – Primary Covered Transactions***

This certification is required by the regulations implementing Executive Order 12549, Debarment and Suspension, 7 CFR Part 3017, Section 3017.510, Participants' Responsibilities. The regulations were published as Part IV of the January 30, 1989, Federal Register (pages 4722-4733). Copies of the regulations may be obtained by contacting the Department of Agriculture agency offering the proposed transaction.

- (1) The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:
- (a) are not presently debarred, suspended, proposed for Debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
  - (b) have not within a 3-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
  - (c) are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and
  - (d) have not within a 3-year period preceding this application/proposal had one or more public transactions (Federal, State, or local) terminated for cause or default.
- (2) Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

University of Maine at Fort Kent  
*Organization Name*

John Murphy, Vice President, UMFK  
*Name and Title of Authorized Representative*

  
*Signature*

9/8/2010

*Date*

*(This is not an official Government form. It has been prepared to assist and expedite the application process and is only intended for use in the Program for Assistance to Rural Communities with Extremely High Energy Costs.)*

## C.4. Environmental Profile

**United States Department of Agriculture  
Rural Development Rural Utilities Service  
ASSISTANCE TO HIGH ENERGY COST RURAL COMMUNITIES  
ENVIRONMENTAL PROFILE  
(To Be Completed by the Grant Applicant)**

The Rural Utilities Service (RUS) is required by the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S.C. 4321), the Council on Environmental Quality Regulations (40 CFR Parts 1500-1508), and RUS implementing regulations (7 CFR Part 1794) to consider the potential environmental impacts resulting from providing Federal financial assistance. As an applicant for Federal financial assistance, your project will be subject to the requirements of RUS's Environmental Policies and Procedures (7 CFR Part 1794) prior to the release of any grant or loan funds.

Please complete the following project profile to facilitate the Agency's initial environmental review. The RUS Environmental Staff will evaluate the requested information as part of the final pre-award review for selected applicants.

### **Part I: General Information**

1. Describe the project as specifically as possible, *i.e.* new facilities to be constructed, capital purchases, equipment purchases or modifications to existing facilities.

*The proposed project will not require the construction of any new buildings. It will involve the following:*

- *Renovation of one existing building to house the new biomass boiler, feed system, and solid fuel storage room,*
- *2,658 feet of underground Pex piping,*
- *8 "junction pits" that will allow secondary distribution lines to extend from the primary distributions lines and allow for future expansion,*
- *8 connections of the Pex piping to hot water distributions systems to heat 11 existing buildings,*
- *Conversion of two steam systems to hot water systems.*

2. Is any part of your project located on land owned or under the jurisdiction of a Federal or state agency? If yes, please identify the agency(s).

*The UMFK Project facilities are situated on property owned by the University of Maine System.*

3. Does any part of your project require review and or permitting by any Federal, State, regional, local, tribal, environment, or regulatory agency? If yes, please provide a list of required reviews and permits.

*Yes. Local building permits are required. There are also proposed EPA regulations limiting emissions from biomass boilers. These regulations and permitting requirements, as well as a description of how we will fulfill these requirements, are further detailed in our Grant Proposal Narrative.*

4. Has an environmental impact review (e.g. NEPA documentation, permits, agency consultations) related to the project been prepared? If yes, please provide details. You may be asked to provide a summary or copy of the report as part of a pre-award review.

*No.*

5. Is the proposed project part of a larger project? If yes, please describe.

*Not officially, although the project is being designed so that it may be expanded to include additional buildings on the UMFK campus, 3 additional buildings on the MSAD 27 grounds, and 2 nearby buildings owned by the Town of Fort Kent.*

6. Do you anticipate requesting additional Federal funding for subsequent phases of this project? If yes, please describe.

*Yes, if appropriate grant programs are/become available.*

7. If the scope of your project is limited to the installation or replacement of equipment or facilities located within existing buildings or other structures and does not involve outside construction or ground disturbance, please skip to Part III. Otherwise continue with Part II.

## **Part II: Environmental Considerations**

Provide the following information, as appropriate, for the construction of new facilities or modification of existing facilities.

- The amount of clearing or excavation required. Indicate the estimated number of acres or length and width of the right-of-way if the project is linear (e.g. pipeline or power line).

*Staging at the renovation site will require minimal disruption to the grounds around the existing building, perhaps ¼ acre. The Pex piping trenches will require narrow trenches of less than 1 foot wide by up to 5 feet deep for a total length of 2,658 feet. See Project Site Map for layout.*

- The amount of dredge and/or fill in wetlands. Indicate the number of acres involved.

*None*

- Describe any pre-existing contamination of the construction site.

*None*

- Areas with special designation that may be impacted (e.g. National Forests, Parks, Trails)

*None*

- Proximity of the project to floodplains, wetlands, coastal management zones, or coastal barrier resource areas.

*Portions of the properties lie in the 100 year flood zone of Fish River floodplain. No special risks, however, exist for this reason.*

## **Part III: Contact Information**

Please provide the name, address, telephone number and email address of the preparer of this form and a contact person who can answer questions or provide additional information.

*(This is not an official Government form. It has been prepared to assist and expedite the application process and is only intended for use in the USDA.)*

John D. Murphy  
Vice President for Administration  
University of Maine at Fort Kent  
23 University Drive  
Fort Kent, ME 04743  
207-834-7516, [jdmurphy@umaine.edu](mailto:jdmurphy@umaine.edu)