

Energy Education through UAF's Rural Campuses - Occupational Endorsement in Sustainable Energy -

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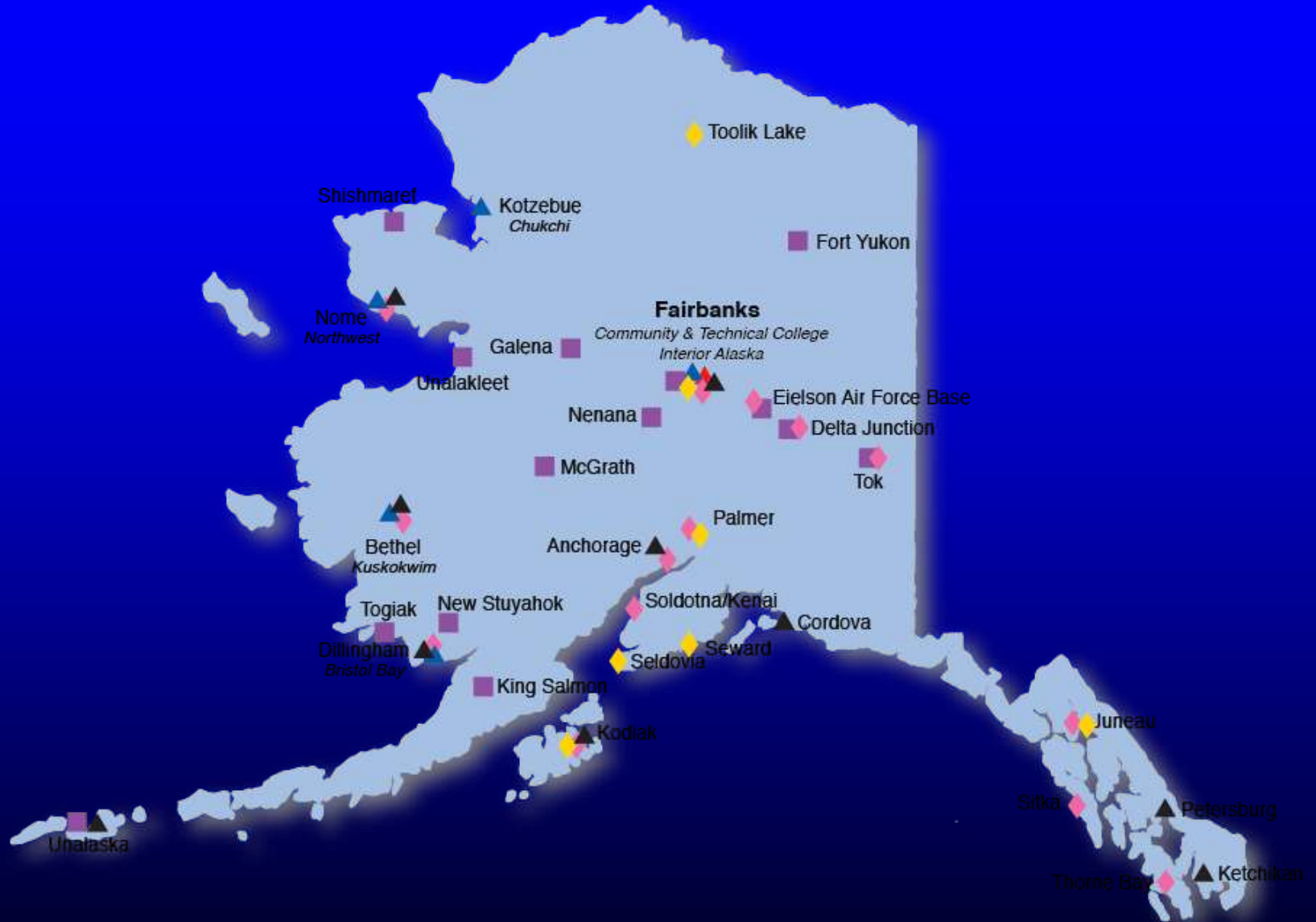
University of Alaska Fairbanks Bristol Bay Campus



Alaska Rural Energy Conference, Fairbanks, April 2018



UAF's Rural Campuses



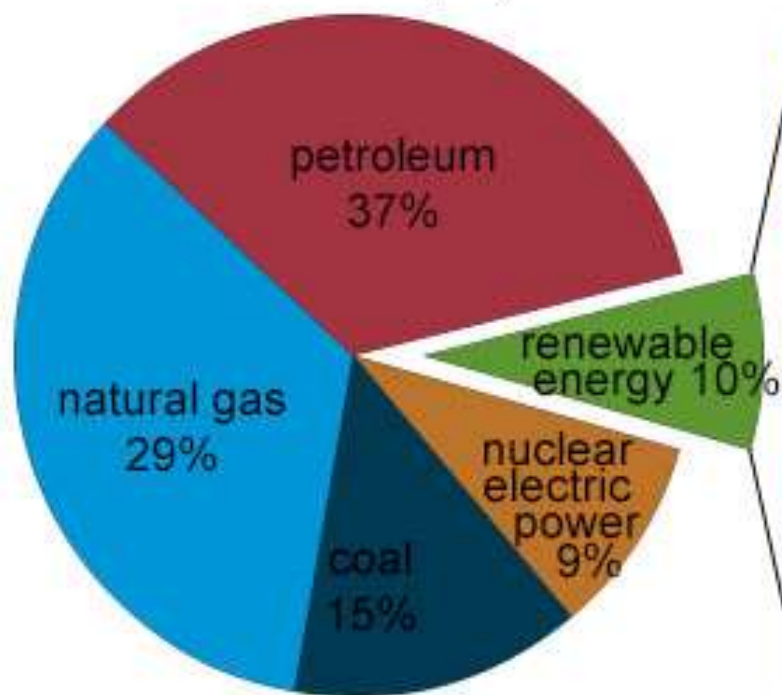
What is “sustainable energy”?

Energy that is produced and used in a sustainable way, i.e. in a way using practices that can be kept in existence.

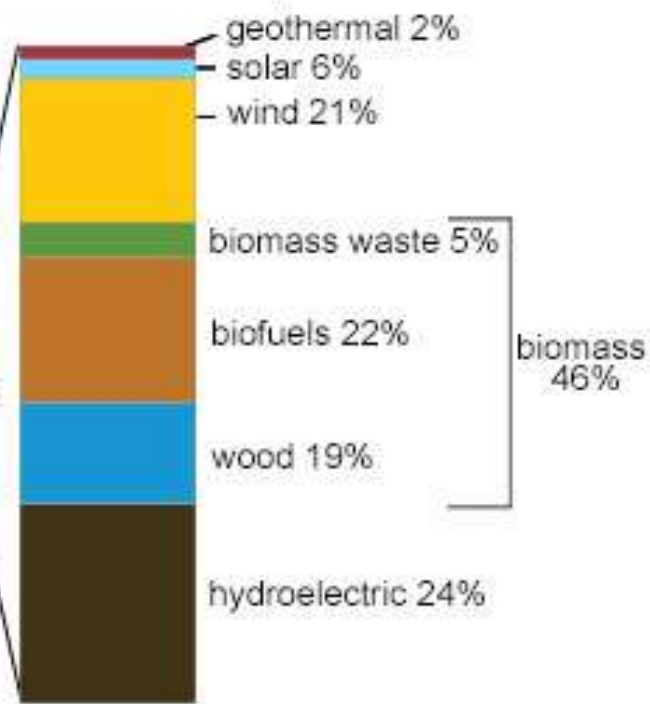


U.S. energy consumption by energy source, 2016

Total = 97.4 quadrillion
British thermal units (Btu)



Total = 10.2 quadrillion Btu



Note: Sum of components may not equal 100% because of independent rounding.

Source: U.S. Energy Information Administration, *Monthly Energy Review*, Table 1.3 and 10.1, April 2017, preliminary data

How do we get closer to energy sustainability?

Reduce consumption of fossil fuels through:

Energy Efficiency



Renewable Energy



UAF Sustainable Energy OE

- Latest version approved in Fall 2012
- 12 credits minimum
- Required core (6 cr) + electives (6 cr minimum)
- Offers a distance-delivery option



UAF Sustainable Energy OE

6 credits of required courses:

- * DEVM F105 or CTT F106 or TTCH F131 – basic math course (3 cr.)
- * ENVI F220 – Intro to Sustainable Energy (3 cr.)

6 credits (minimum) of electives:

- * CT S201 – Cold Climate Construction (3 cr.)**
 - CTT F100 – Construction Technology Core (3 cr.)
 - CTT F160 – Photovoltaic Systems – Part I (5 cr.)
 - CTT F161 – Photovoltaic Systems – Part II (5 cr.)
 - CTT F250 – Current Topics in Construction Trades (1-3 cr.)
- * ENVI F101 – Introduction to Environmental Science (3 cr.)
- * ENVI F120 – Home Energy Basics (1 cr.)
 - ENVI F121 – Building Ventilation and Energy (1 cr.)
- * ENVI F122 – Energy Efficient Building Design and Simulation (1 cr.)
- * PHYS F102X – Energy and Society (4 cr.)
 - or other advisor approved electives

* distance-delivered

** offered by UAS

Sustainable Energy Courses

- Special Topics -

ENVI 193: Blower Door Testing for Energy Efficiency

ENVI 193: Passive House / Energy Efficient Construction

ENVI 193: Building Ventilation and Energy

ENVI 193: Wind Energy Training

ENVI 193: Residential Weatherization for Alaska

ENVI 193: Residential Energy Auditing in Alaska

ENVI 193: Residential Solar Power

ENVI 193: Residential Wind Power

ENVI 193: Intro to Bristol Bay Energy

ENVS 193: Electric Car Conversion

CTT 193: Building Science Thermography Training

SCIA 193: Biodiesel and Vegetable Oil Fuel Systems



Educational Tools



Solar PV system



Passive House model



Electric Car



Solar/Wind Hybrid



Bike Generator

UAF Sustainable Energy OE

- Current Status -

Numbers:

- Number of students currently enrolled: ~20
- Number of graduates until Fall 2017: 59

How is this Occupational Endorsement being used:

- As a starting point towards another degree
(e.g. Interdisciplinary AAS in Sustainable Energy)
- As an add-on to a different degree
(e.g. BS in Electrical Engineering with an OE in Sustainable Energy)
- To help people in their current job
(e.g. school principal, campus director, grant writer)
- To obtain a new job
(e.g. solar installer)
- To reduce personal energy use and energy bills
(added benefit for program participants)



Current Project

- Dual Credit Package -

ENVI 120 Home Energy Basics

- Credit for students
- Recorded lectures
- Material for hands-on activities
- Guidance for class discussions
- Integrated by teachers into their science classes

**GRANT
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ED 593 Integrating Sustainable Energy in Secondary Classrooms

- Continuing education credit for teachers
- Integrating ENVI 120 into their science classes
- Learning how ENVI 120 correlates to secondary education science standards



Contact Information

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