



## The Solutions Network

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# Sustainable Fort Lewis

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- ❖ The Beginning
- ❖ Sustainable Goals
  - Energy
  - Infrastructure
  - Others
- ❖ Sustainable Projects
- ❖ Energy Initiatives
- ❖ Next Steps

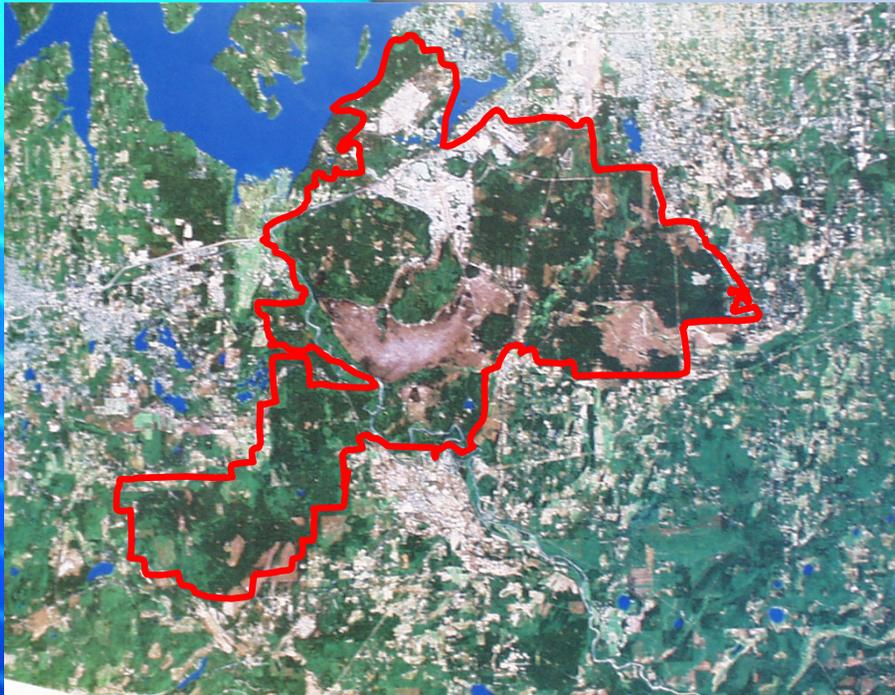
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# Why Sustainability?

## Fort Lewis From Space



- ❖ Ensures that environment will support Mission accomplishment for the long haul
- ❖ Proactively addresses long-range issues with mission impact (*"Pay me now or pay me later"*)
- ❖ Allows cooperative effort with community, regulators, other stakeholders on common issues (*e.g., urban sprawl; noise; air and water pollution; energy use*)
- ❖ Demonstrates leadership; enhances public perception of the military
- ❖ The right thing to do



# The Approach

(1) Establish the baseline  
*(Baseline Document)*

(2) Address the issues  
*(Installation Sustainability  
Workshop, Feb 5-7, 2002)*

- Stakeholders from within and outside Fort Lewis
- Defined desired end states and 25-year goals for each focus area

(3) Link objectives to resources for each goal *(5-year plans)*

- Implementation Teams assigned, including outside stakeholders as needed
- Resource the plans through the installation programming and budgeting process



The logo features a stylized sunburst in shades of yellow and orange, with the word "Energy" in a bold, italicized font. The year "2004" is positioned above "Energy".

# 2004 Sustainability Goals

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- ❖ Reduce traffic congestion and air emissions by 85%.
- ❖ Reduce air pollutants from training.
- ❖ Reduce stationary air emissions by 85%.
- ❖ Sustain all activities on Post using renewable energy sources.
- ❖ All facilities adhere to SPiRiT/LEED Platinum standard.
- ❖ Cycle all material to achieve ZERO net waste.

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# 2004 Sustainability Goals

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- ❖ Achieve ZERO discharge of wastewater.
- ❖ Reduce potable water consumption by 75%
- ❖ Contribute no pollutants to groundwater and remediate all contaminated groundwater.
- ❖ Develop an effective regional water aquifer and watershed management program (2012)
- ❖ Maintain healthy, resilient Fort Lewis and regional lands that support training, ecosystem, cultural and economic values.
- ❖ Recover all listed and candidate federal species in region.



## FY 02 Barracks

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- ❖ Recycled Materials
- ❖ Energy Star Appliances
- ❖ Low/Zero VOCs
  - Paints/Coatings
  - Sealants/Adhesives
  - Composite Wood
  - Carpets
- ❖ Heat Recovery
- ❖ DDC Controls
- ❖ Covered Bicycle Storage

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# FY 02 Barracks



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# Laundry Room Horiz Axis Washers



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# Laundry Room Waste Heat Recapture



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# DDC Controls



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# Recycled Materials



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# FY 03 Barracks



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## FY 03 Barracks

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- ❖ Day-lighting
- ❖ Captured rainwater for irrigation
- ❖ Waterless Urinals
- ❖ Recycled Materials
- ❖ Ultra Efficient Plumbing Fixtures
- ❖ Lighting Controls

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# 2004 FY 04 Barracks

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- ❖ Eco-Charrette
- ❖ LEED Certification
- ❖ Outside Cx Agent
- ❖ Certified Wood Furnishings
- ❖ Innovation Credits
  - Regional Materials
  - Exceptional Performance (Construction Waste Recycling)

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# LEED EB Pilot



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The logo features a stylized sun with rays in shades of yellow and orange, with a blue wave-like shape below it. The text '2004' is in a blue, sans-serif font, and 'Energy' is in a larger, bold, blue, sans-serif font with a slight shadow effect.

# 2004 Renewable Energy

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- ❖ Sustain all activities on post using renewable energy sources and generate all electricity on post by 2025.

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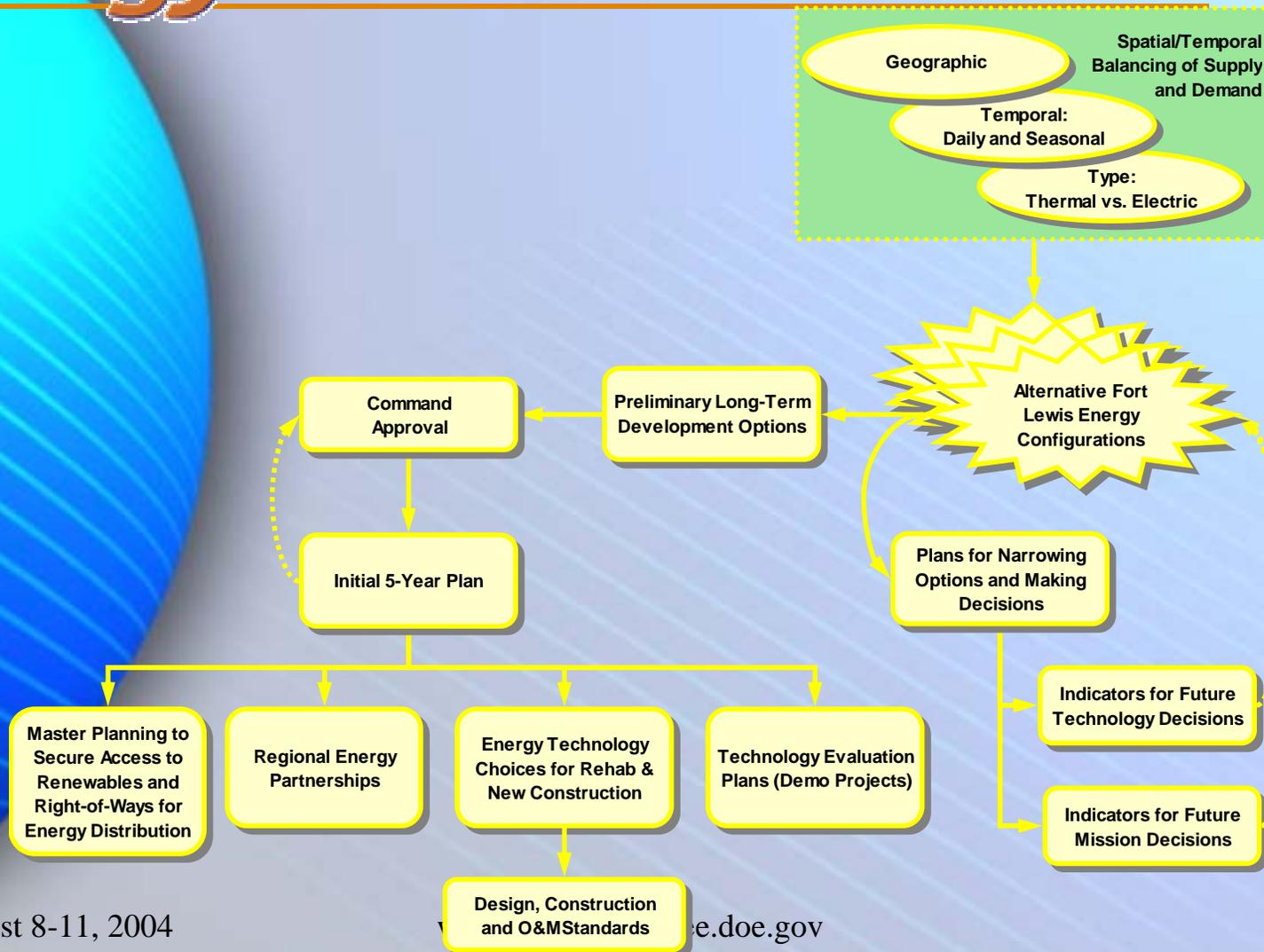
# Renewable Sources

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- ❖ Wind energy—Yakima Firing Range  
Issues: mission compatibility and agreement with Yakima Indian Nation
- ❖ Purchased electricity from renewables  
Dedicated contracts, green tags, spot market
- ❖ Mixed biomass  
Dedicated crops and/or timber, farm, and dairy wastes
- ❖ Synfuels from the marketplace
- ❖ Solar energy—Yakima Firing Range (Fort Lewis???)
- ❖ Municipal solid waste and/or methane from landfills



# Road Map – Energy Sustainability



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# Demand/Consumption - Supply Scenarios

	Gas/Electric	Time	All-Electric	Time
Peak Electric Demand	30.8 MW <sub>e</sub>	July weekday @5PM	81.7 MW <sub>e</sub>	January weekday @8AM
Lowest Electric Demand	13.1 MW <sub>e</sub>	July weekday @2AM	19.7 MW <sub>e</sub>	July weekday @2AM
Peak Gas Demand	3,000 Therms	January weekday @8AM		
Lowest Gas Demand	204 Therms	July weekday @1AM		
Annual Electricity Consumption	158,876 MWH		244,978 MWH	
Annual Gas Consumption	5,227,958 TH			

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# End-Use Consumption

## End Use Energy Consumption for the Mixed Gas/Electricity Supply Scenario

		Heating	%	Cooling		Ventilation		Lighting		Motors & Equip		Hot Water		TOTAL
Electricity	<i>kWh</i>	5,698,546	4%	2,532,610	2%	15,734,441	10%	29,352,192	18%	100,921,208	64%	4,636,896	3%	158,875,893
Natural Gas	<i>therms</i>	3,133,158	60%	0	0%	0	0%	0	0%	471,909	9%	1,622,892	31%	5,227,959
Total	<i>MBtu</i>	332,765	31%	8,644	1%	53,702	5%	100,179	9%	391,635	37%	178,115	17%	1,065,040
End Use Intensity	<i>Mbtu/1,000ft<sup>2</sup></i>	12.2	31%	0.3	1%	2	5%	3.7	9%	14.3	37%	6.5	17%	39

## End Use Energy Consumption for the All-Electric Supply Scenario

		Heating	%	Cooling		Ventilation		Lighting		Motors & Equip		Hot Water		TOTAL
Electricity	<i>kWh</i>	26,412,640	11%	5,467,646	2%	24,852,318	10%	29,352,192	12%	114,748,024	47%	44,145,332	18%	244,978,152
Total	<i>MBtu</i>	90,146	11%	18,661	2%	84,821	10%	100,179	12%	391,635	47%	150,668	18%	836,110
End Use Intensity	<i>Mbtu/1,000ft<sup>2</sup></i>	3.3	11%	0.7	2%	3.1	10%	3.7	12%	14.3	47%	5.5	18%	31

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# Supply Scenarios

Scenario/Type A-Centralized Gen B-Distributed Gen	Use DHS?	Fuel Dist	Compliance with Goals					Cost				Risk			Timing (years)
			1	2A	2B	3	Mob Fuel	Cap	O&M	Fuel	Elect	Tech	Supply	Fin	
1A Single Thermal Biomass Plant	Y	N	N	N	P	Y	N	L	M	M	Grid+	L	L	L	5-year constr
2A Multiple Thermal Biomass Plants	Y	N	Y	Y	Y	Y	N	L+	M	M+	G++	L	L	L	5-year constr
3A YFR Wind (all electric)	N	N	Y	N	N	Y	N	L-	L	L	G-	L	M	L	permit +3-5 years
4A YFR Wind +Biomass	?	N	Y	N	P	Y	N	L	M	L	G	L	L	L	permit + 3-5 years
5A YFR Wind + Minimum Synfuel	N	N	Y	N	Y	Y	Y	M	H	M	G+	M	L	M	decision 10 years +
5B YFR Wind + Minimum Synfuel	N	Y	Y	N	Y	Y	Y	M	H	M	G+	M	L	M	decision 10 years +
6A Large On-Site Synfuel Plant	Y	N	Y	Y	Y	Y	Y	H	H+	M	G+++	H	L	H	decision 10 years +
6B Large On-Site Synfuel Plant	N	Y	Y	Y	Y	Y	Y	H	H+	M	G+++	H	L	H	decision 10 years +
7A Purchase Synfuel	Y	N	Y	Y	Y	Y	Y	M	M	H	G++	H	L	H	decision 10 years +
7B Purchase Synfuel	N	Y	Y	Y	Y	Y	Y	M	M	H	G++	H	L	H	decision 10 years +



# Other Initiatives



**Bio-diesel**

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# 2004 Energy Other Initiatives



NEV's



E-85 Station



CNG Station



Coming Soon

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# Other Initiatives



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## Washington Military Sustainability Partnership

- ❖ Fall 2003 (Oct 30):
  - **Host a Sustainability Education Day for Military Leadership to Set Stage for Further Action**
- ❖ Spring 2004:
  - **Installations Identify critical issues, Start on Long Term Goals**
- ❖ Winter 2004:
  - **Installations Crossfeed Individual Sustainability Goals**
  - **Look for Common Regional Goals**
  - **Discuss Establishing Regional Senior Leadership Program**
- ❖ 2005:
  - **Invite State Agencies into the Partnership**



Governor Locke, LTG Soriano, & COL Perrenot  
at the Sustainability Education Day for  
Washington Military Leadership, 30 Oct 2003

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