


Economic Aspects of Producing Food in Alaska

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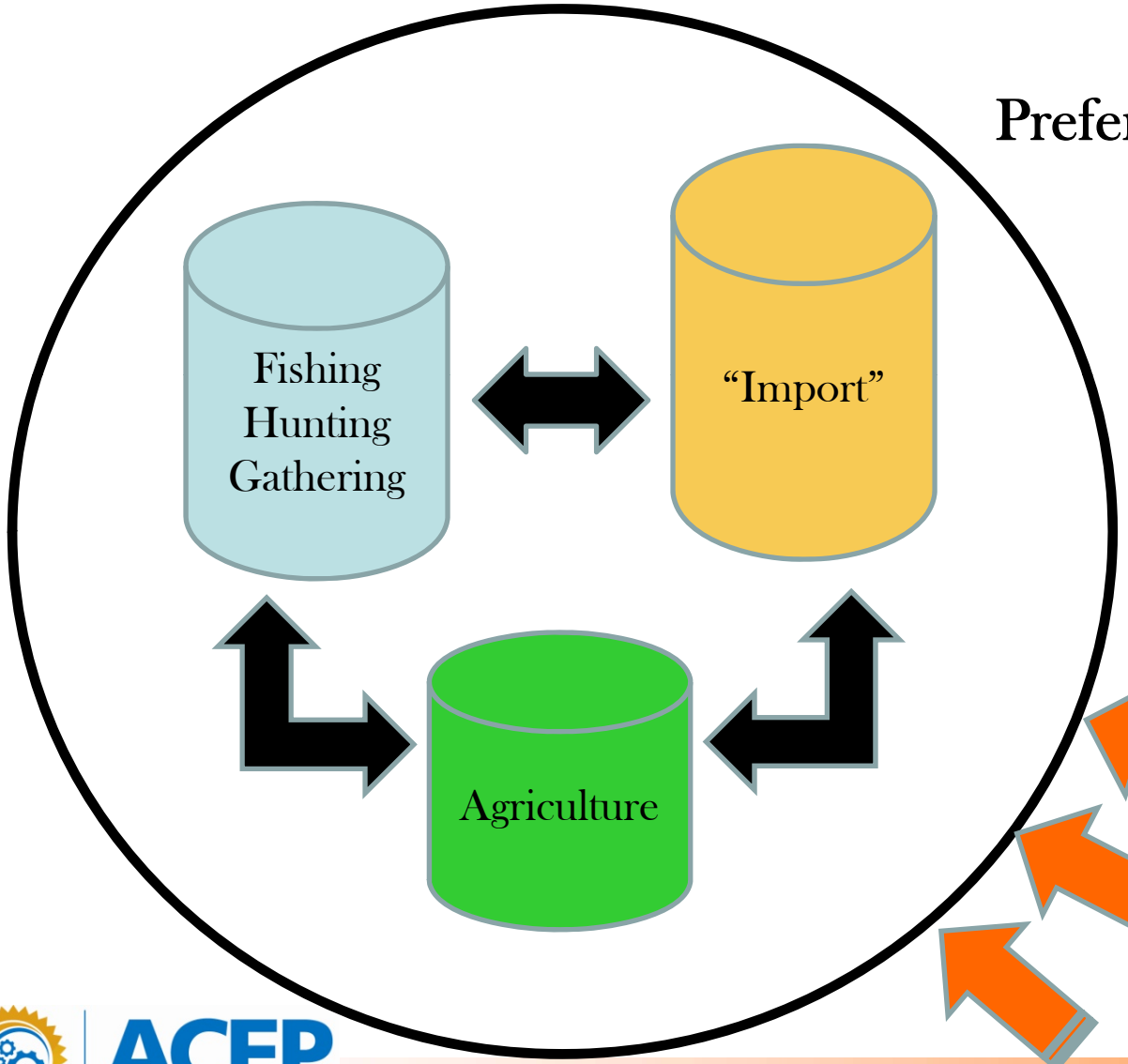
Outline

- Rural Alaskan Food System
  - Seasonal Subsistence & Gardening
  - Historic Garden Production Data
- Case Studies
  - Greenhouse Economics
  - Egg Production & Carbon Footprint
- Conclusion

Rural Alaskan Food System



Choices

Preferences & Circumstances

Risk Awareness

Time vs. Money

External Factors

Regulations & Policies

Food Policy Council

Environmental Organizations

Alaska Grown

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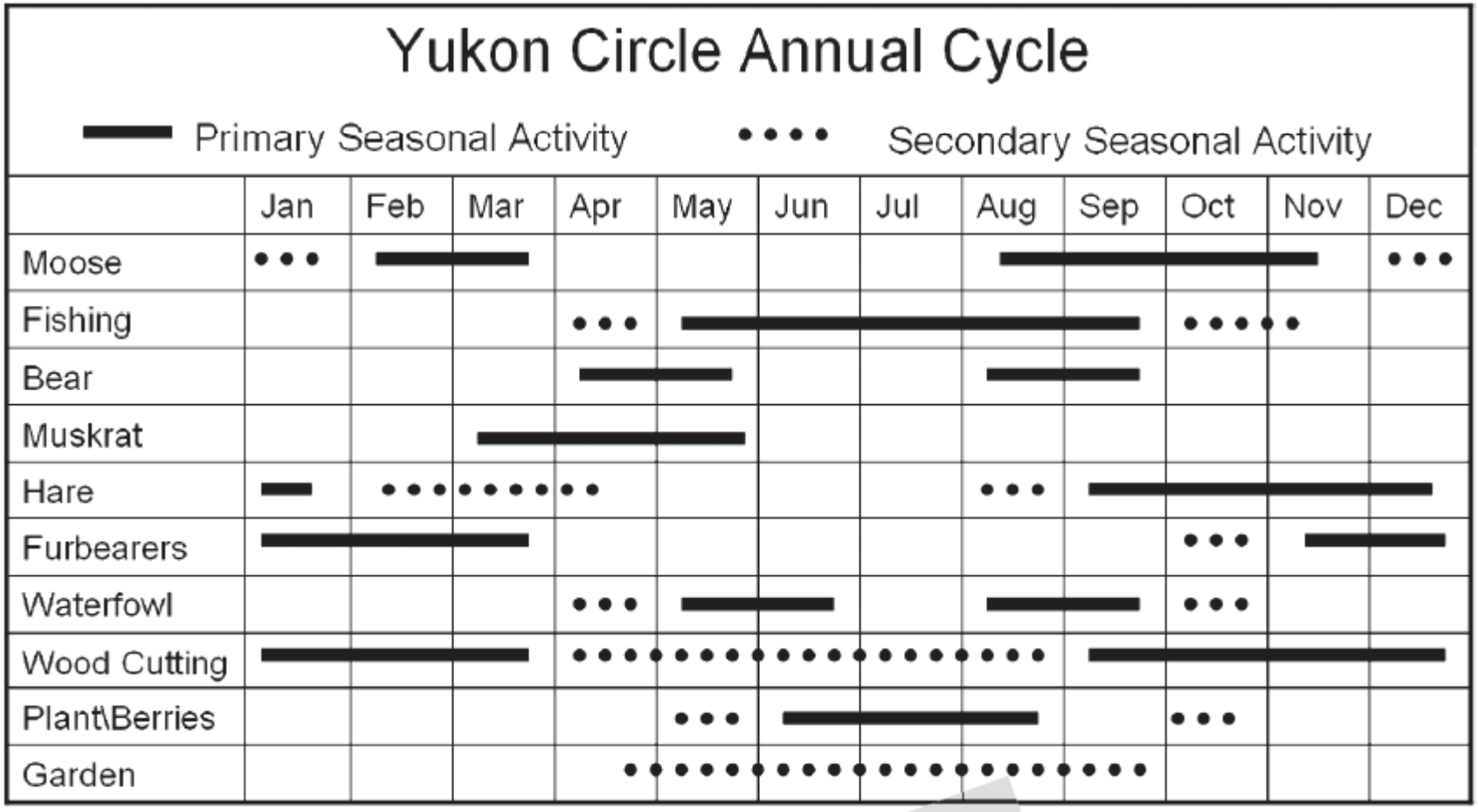
Seasonal Subsistence



Summary Data (BIA records)

Village	Years Reporting (n)*	Earliest mention of gardening	Average population	Avg. # of families eating from garden	Productivity range (lbs, min.–max.)
Arctic Village	1959–62 (4)	1959	86	0	0–13.5
Beaver	1940–67 (13)	1936	92	11	0–6300
Birch Creek	1963–67 (2)	1962	32	3	1863–2400
Canyon Village	1964–67 (2)	1964	37	2	0–285
Chalkyitsik	1946–66 (5)	1946	77	7	0–5600
Circle	1944–57 (8)	1944	66	6	345–1900
Fort Yukon	1941–56 (4)	1898	382	25	3000–29700
Minto	1941–63 (13)	1933	140	8	180–8750
Stevens Village	1941–67 (15)	1941	72	8	0–3900
Venetie	1941–71 (15)	1931	81	10	0–28095

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Case Study 1/2

Chena Hot Springs Resort (CHSR) - greenhouse

- economic analysis of the greenhouse operation at CHSR
- 72 ft x 60 ft hydroponic greenhouse

after 7 days

- conservative 32 day growing period
- costs $2.01 to produce a head of lettuce (optimized benchspace)

- <u>Application:</u> waste heat utilization

Case Study 2/2

Local Egg Production vs. "Importing" Eggs to Fairbanks

- Is "Buying Local" Better?
- Greenhouse gas emissions associated with:
  - Electricity use
  - Transporting chicken feed and eggs

→ Carbon Footprint

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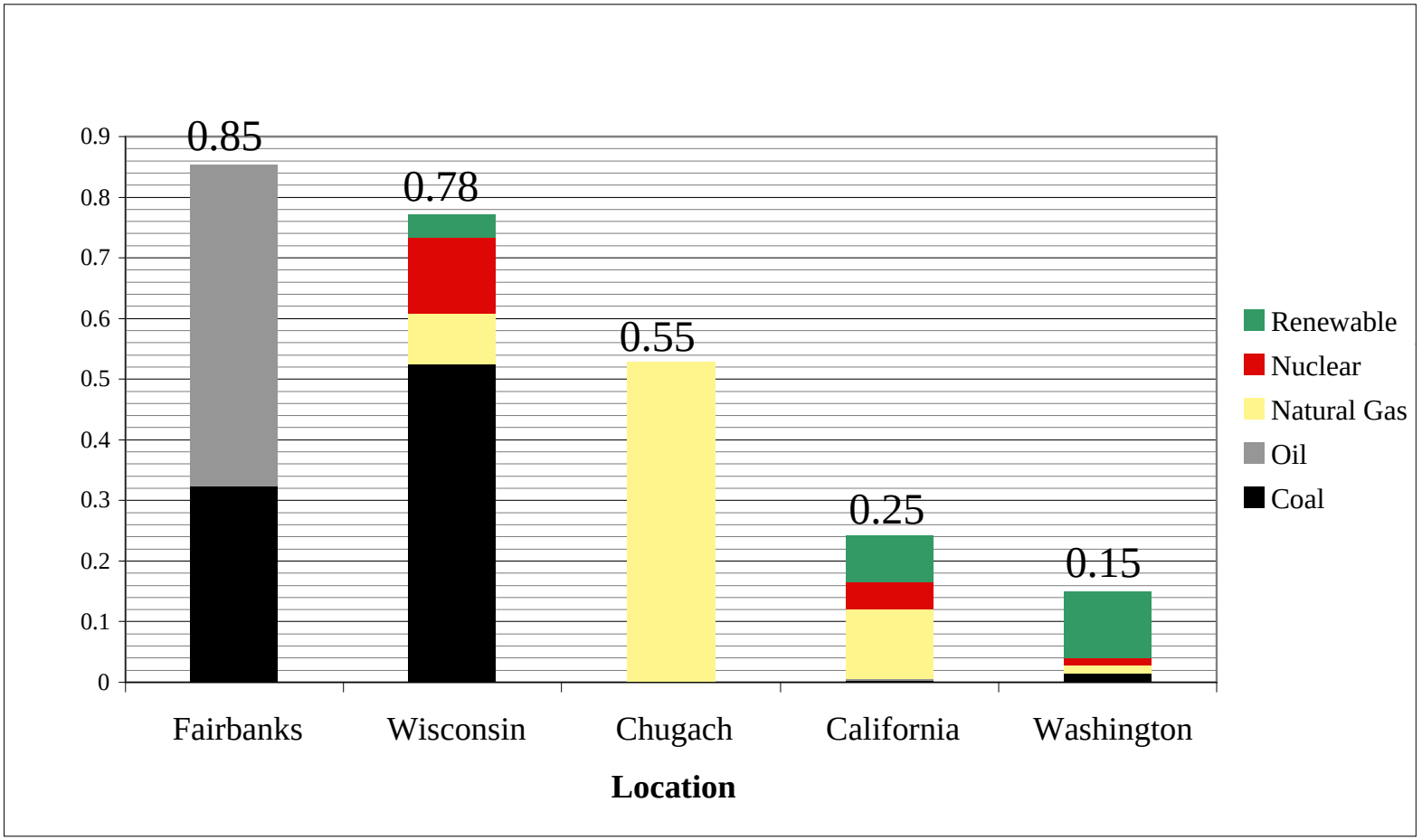
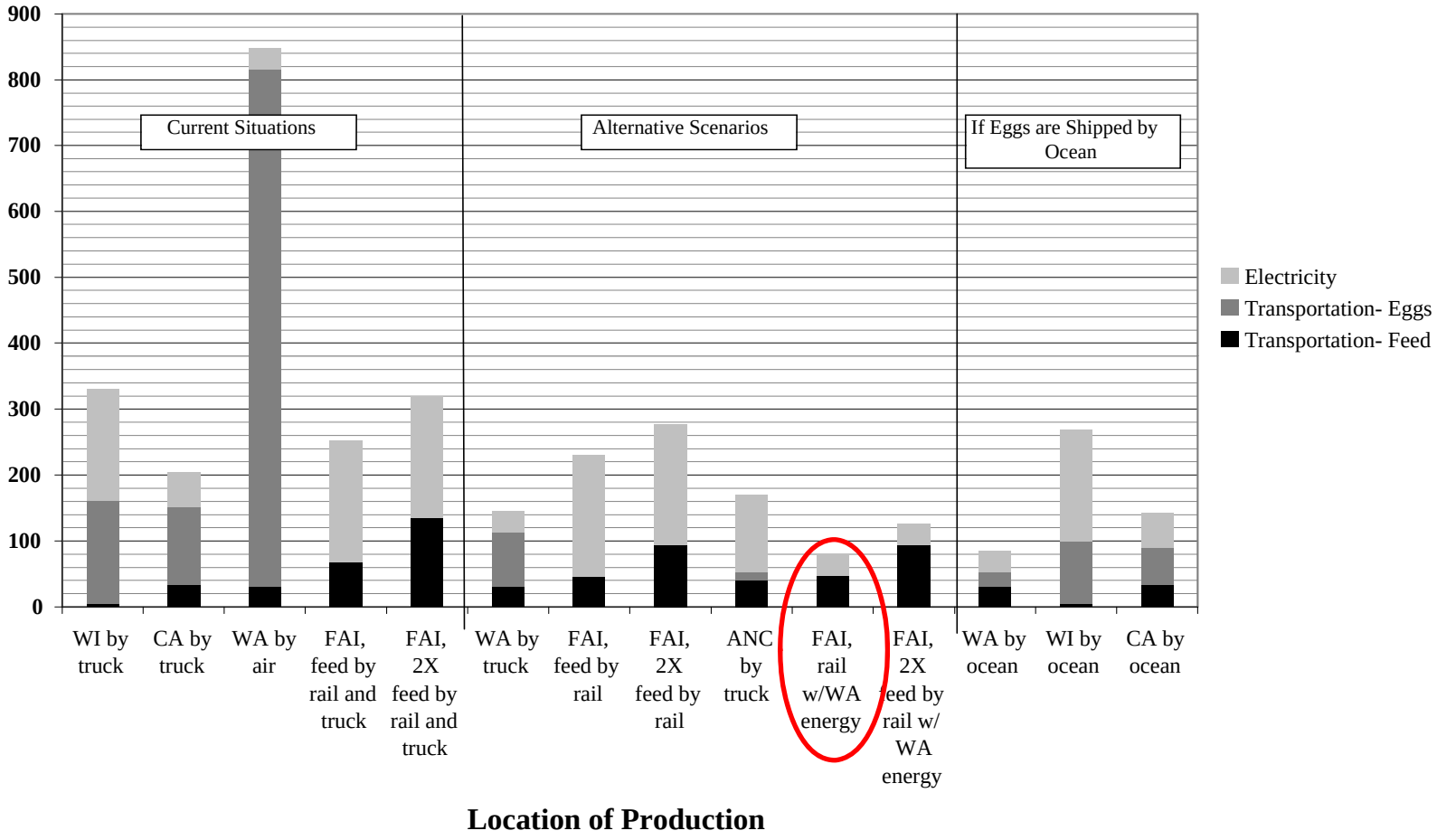
Smith 2010

Case Study 2/2



Greenhouse gas emissions per kilowatt-hour resulting from electricity generation in different locations, in $kgCO_2e/kWh$.

Case Study 2/2



Annual carbon footprint for eggs consumed in Fairbanks, in $kgCO_2e/yr$.

Case Study 2/2

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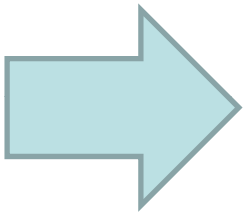
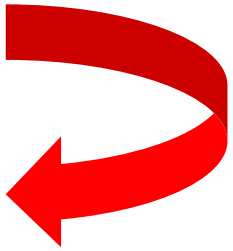


Carbon Footprint



Where was the food produced?

What were the energy inputs?

vs.

How far did the food travel?

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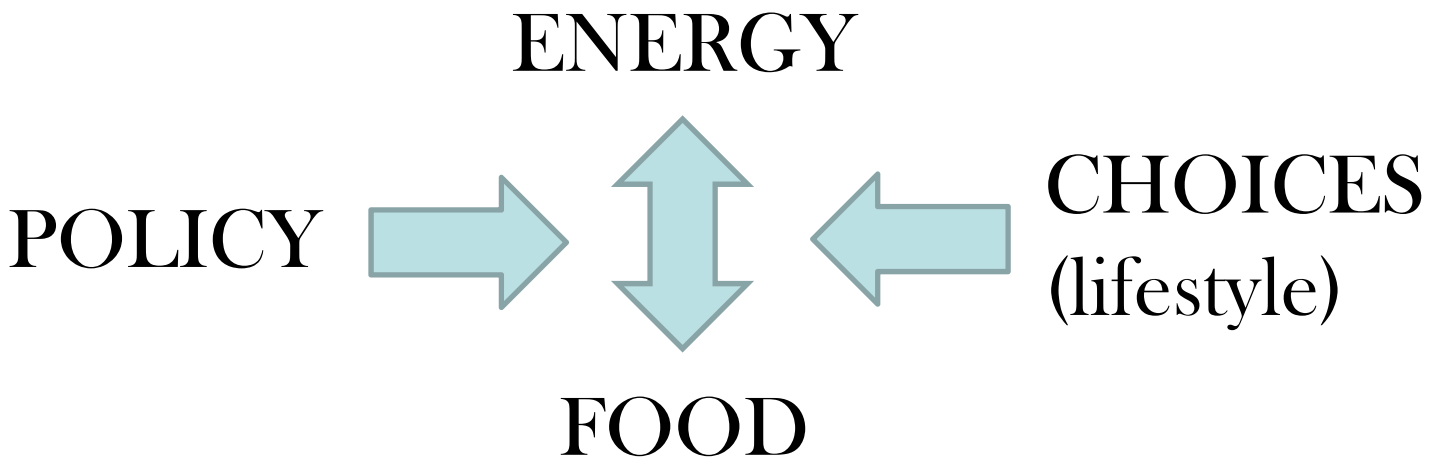
Conclusion

- Understanding of the local food system
- "Solutions" differs by community (individual)



- It's your **choice** because it's your time and money!

Thank you for your attention!

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Sources

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Loring 2010: Philip A. Loring, S. Craig Gerlach; Outpost Gardening in Interior Alaska: Food System Innovation and the Alaska Native Gardens of the 1930s through the 1970s.

Mager 2008: Economics of Greenhouse Production in Alaska – Using the Greenhouse at Chena Hot Springs Resort as a Model

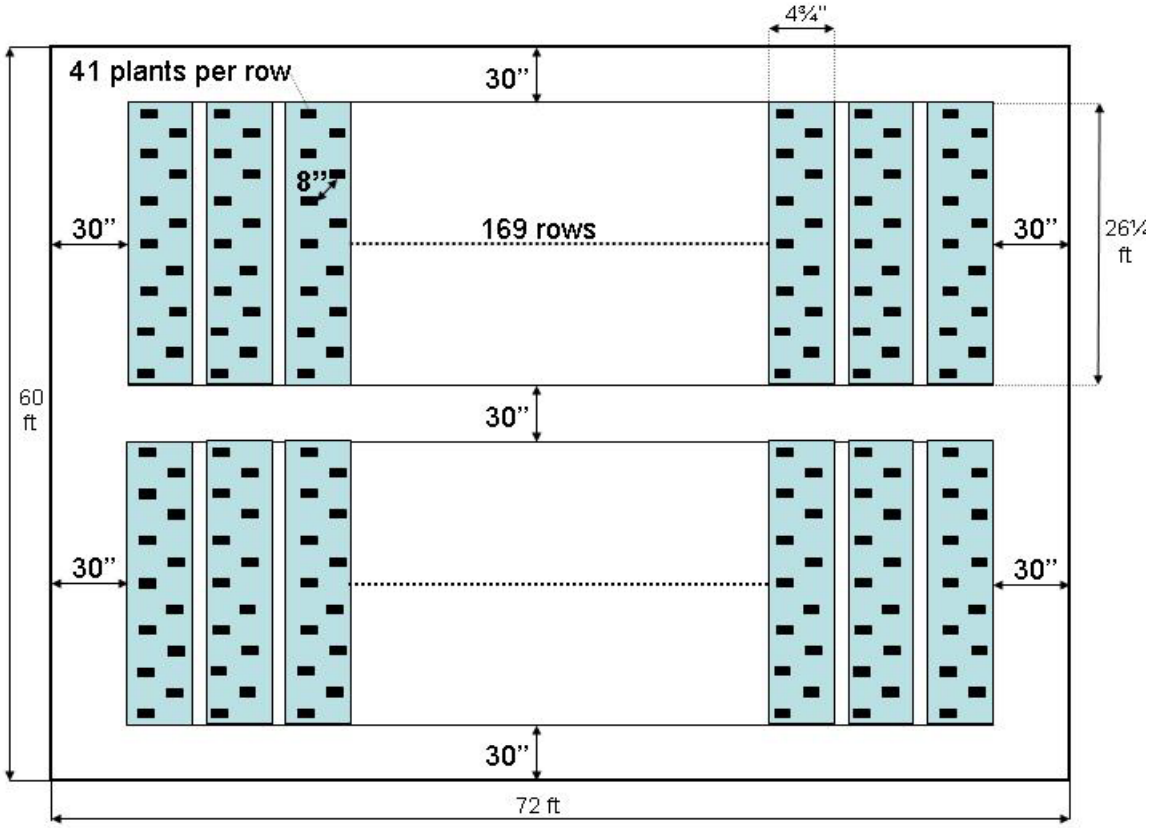
Rasmussen 2002: Rasmus Ole Rasmussen; Food Consumption Patterns and Local Markets in the Arctic in Sustainable Food Security in the Arctic.

Smith 2010: Is "Buying Local" Better? A Literature Review and Comparison of Production Locations and Greenhouse Gas Emissions for Chicken Eggs Consumed in Fairbanks, Alaska.

Example 1/2 - ECONOMIC ANALYSIS

- Model
  - -> Enterprise Budget
  - -> producing a lettuce-only crop in the greenhouse
  - -> optimized production

-> plant capacity
13,858



Food Survey

Community	Couple 20-50y; Children 6-11	Dec. 2009
Anchorage	$ 123.08	100%
Bethel	$ 261.13	212%
Cordova	$ 207.38	168%
Delta Junction	$ 167.72	136%
Fairbanks	$ 125.48	102%
Haines	$ 179.62	146%
Homer	$ 181.11	147%
Juneau	$ 146.46	119%
Kenai - Soldotna	$ 147.66	120%
Ketchikan	$ 142.63	116%
King Salmon/Naknek	$ 291.23	237%
Kodiak	$ 184.64	150%
Nome	$ 227.37	185%
Palmer - Wasilla	$ 125.29	102%
Petersburg	$ 161.72	131%
Portland, OR	$ 98.52	80%
Seward	$ 178.21	145%
Sitka	$ 166.38	135%
Valdez	$ 160.68	131%

- Family of 4 including 2 school age children, 6-11 years old
- Weekly food cost by community as a percentage of Anchorage cost

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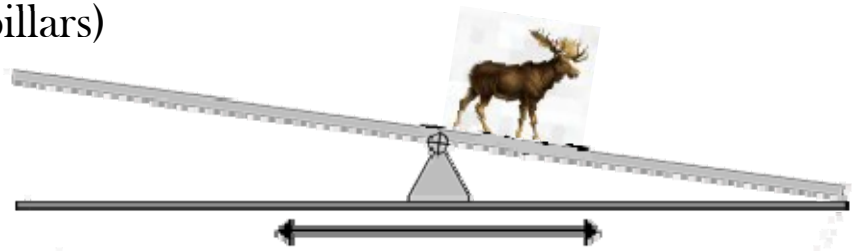
http://www.uaf.edu/ces/fcs/

Food Markets

- properties
  - large farmers (cash crops) vs. small farmers (food crops)
  - food market **integration** reduces the need for food self-sufficiency
    - less depended on what happens locally
  - even in the presence of food markets, Third World farmers' food security is best assured by food self-sufficiency
  - risk and preferences
- rural Alaska's food market
  - isolated & thin
  - substitution possibilities (within pillars)
  - volatile fuel prices
    - transportation cost
    - volatile food prices



Fafchamps 1992