GeoAdaptive
Spatial Technologies + Strategies

UAF
UNIVERSITY OF ALASKA FAIRBANKS

NORTH SLOPE OF ALASKA SCENARIOS PROJECT

THURSDAY, 4 DECEMBER2014
TRONDHEIM, NORWAY

A BIT OF BACKGROUND

- North Slope Science Initiative – PL 109-58 (2005)
- North Slope and Off Shore Environments
- 14 Federal, State and Local Governments with Trust Responsibilities

- Emerging Issues – Iterative Process (2010)
- Applied Research Priorities (Arctic 2011)

- Way to Prioritize Monitoring and Research Needs

Emerging Issue Summaries

Weather and Climate
Increasing Marine Activity
Changing Sea Ice Condition
Contaminants
Permafrost
Coastal and Riverine Erosion
Hydrology and Lake Drying
Coastal Salinization
Fire Regime
Vegetation Change
Species of Interest: Migratory Birds
Species of Interest: Caribou
Species of Interest: Marine Mammals and Their Prey
Species of Interest: Fisheries
Social and Economic Dimensions of North Slope Communities
Rehabilitation and Restoration of Disturbed Tundra

ARCTIC
VOL. 64, NO. 3 (SEPTEMBER 2011)

InfoNorth

Environmental Change and Potential Impacts: Applied Research Priorities for Alaska's North Slope

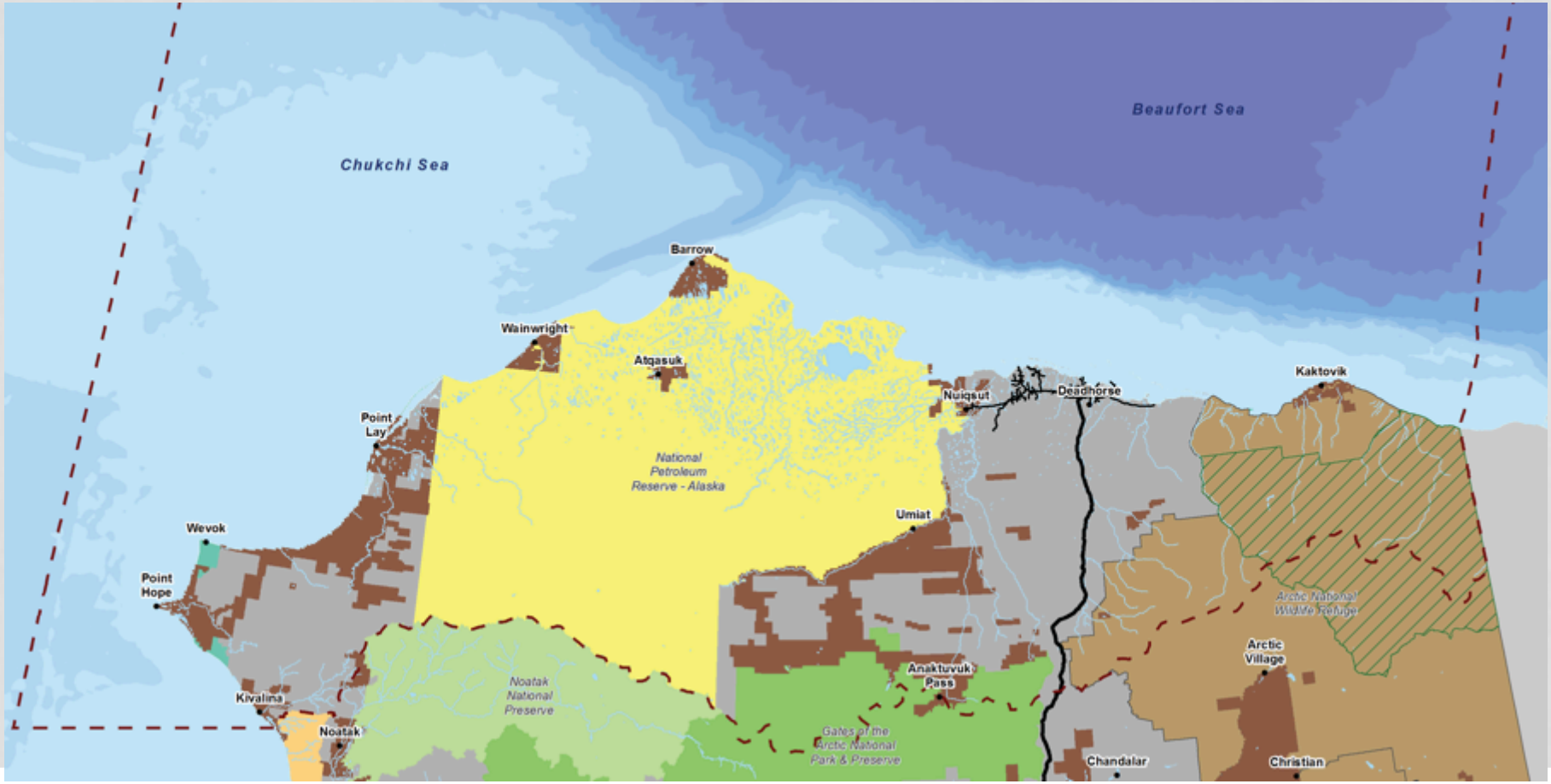
Potential Development Scenarios:
"An understanding of the estimated size, location, and intensity of plausible development activities in the foreseeable future… is important for prioritizing and implementing temporally and spatially appropriate research and monitoring."

Approximately 1/3 of the U.S. Arctic Included in the Project Area

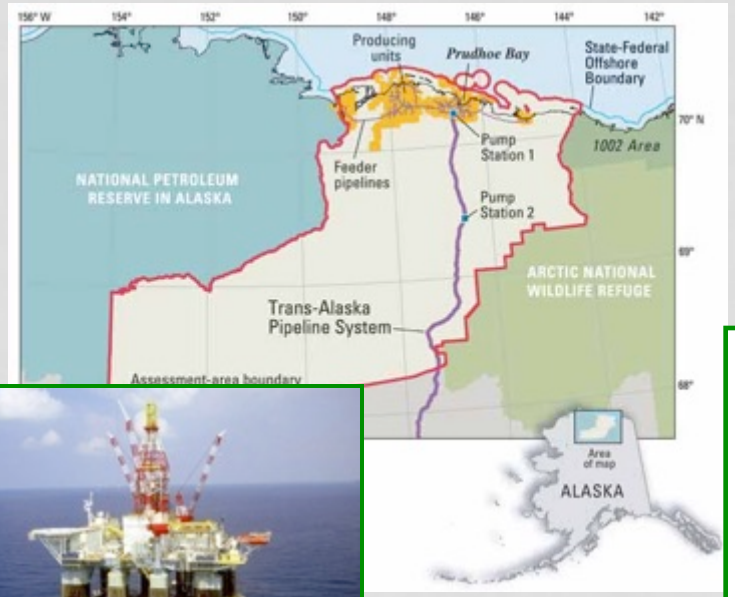
Project region: approximately 761,000 km$^{2)}$ (land and sea)

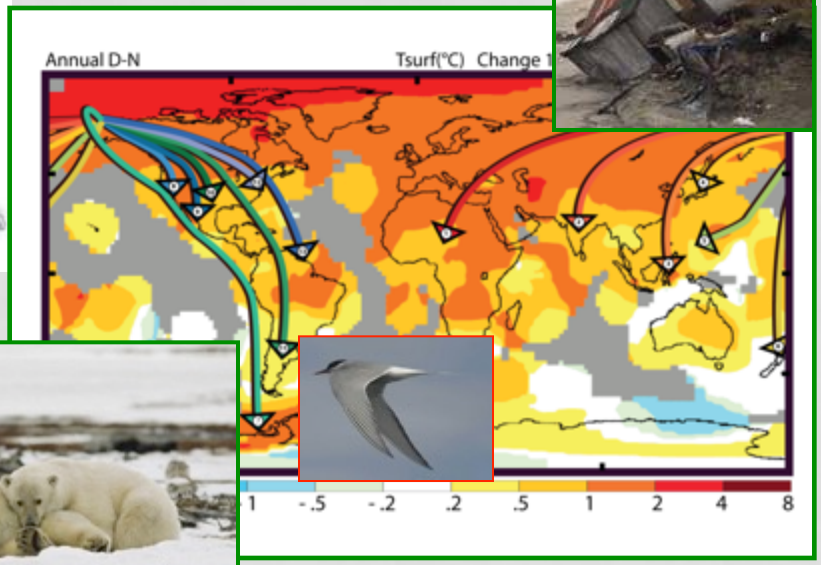
Population: 9,643 (2012 U.S. Census)

Arctic Alaska Petroleum Province: 28 billion barrels of oil & 122 trillion cubic feet of non-associated gas (undiscovered-technically recoverable)(USGS 2012)



BIG ISSUES


Producing units
Prudhoe Bay
State-Federal Offshore Boundary
Pump Station 1
1002 Area
NATIONAL PETROLEUM RESERVE IN ALASKA
Feeder pipelines
Pump Station 2
ARCTIC NATIONAL WILDLIFE REFUGE
Trans-Alaska Pipeline System
Assessment-area boundary
Area of map
ALASKA


Annual D-N
Tsurf(°C) Change
1
-.5
-.2
.2
.5
1
2
4
8

SCENARIOS AS A STRATEGY

- Scenarios are a ***strategic thinking*** process, not a traditional planning process
- It's about ***options***, not actions
- Asks the question: "what ***might*** we need to do?"
- Not the questions: "what ***will*** we do?" or, "***how*** will be do it?"

Scenario Planning Anticipates Multiple Futures

Everyone must plan ahead – the questions is how?

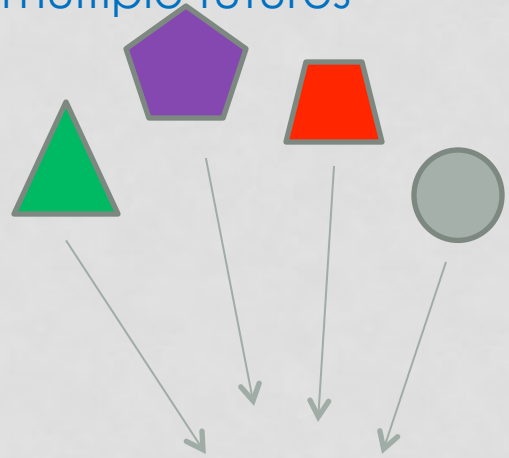
The future is unknown and uncertain
but certainly is NOT unknowable

Scenarios compensate for a tendency to oversimplify the future

A scenario is a story About the way the world might turn out in the years ahead

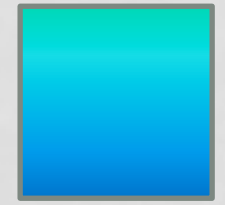
A set of scenarios is a tool for helping us recognize changing aspects of our current environment – and make better decisions, about tomorrow -- today

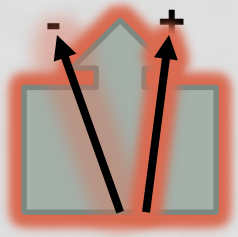
Scenarios…discussing multiple futures



knowns & uncertainties TODAY

Traditional Planning
…for one future





Knowns TODAY

WHAT ARE SCENARIOS?

- Scenarios are plausible views of the world – described in narrative form that provide context in which decisions can be made
- By seeing a range of possible worlds, decisions will be better informed, and a strategy based on this knowledge and insight will be more likely to succeed
- Scenarios do not predict the future, but they do ***illuminate the drivers of change and uncertainty***: understanding them will help decision makers to take greater control

WHY SCENARIOS?

- The world is more complex than envisioned when our institutions were created – we face new challenges and pressures
- Future is not pre-determined or predicable
- Provides structured process for people to start ***consciously*** thinking about the longer-term future and possible implications for strategy today
- A creative and ***shared*** process that allows time for reflection about a region and its future
- It makes sense to look for ways to understand the future and deal with uncertainty

WHY SCENARIOS (CONTINUED)

- **Scenarios strengthen a strategic management tool box**:
  - Traditional planning focuses on the past
  - Scenarios focus on the future and deal with uncertainties
- **Combining both the past and the future makes thinking about strategy stronger and promotes**:
  - Responsiveness
  - Flexibility
  - Better positioning for the future
- **Take into account the "suddenly the world changes" The "wild card" (low-probability, high impact events)**
  - Forces thinking about plausible events ***before*** they happen… systematic thinking now and examine implications

SCENARIOS

- Develop varying "*stories*" as alternative answers to a "***focal question***" about the future, based on creative thinking about the possibilities, supported by logic, current knowledge, and (if available) science

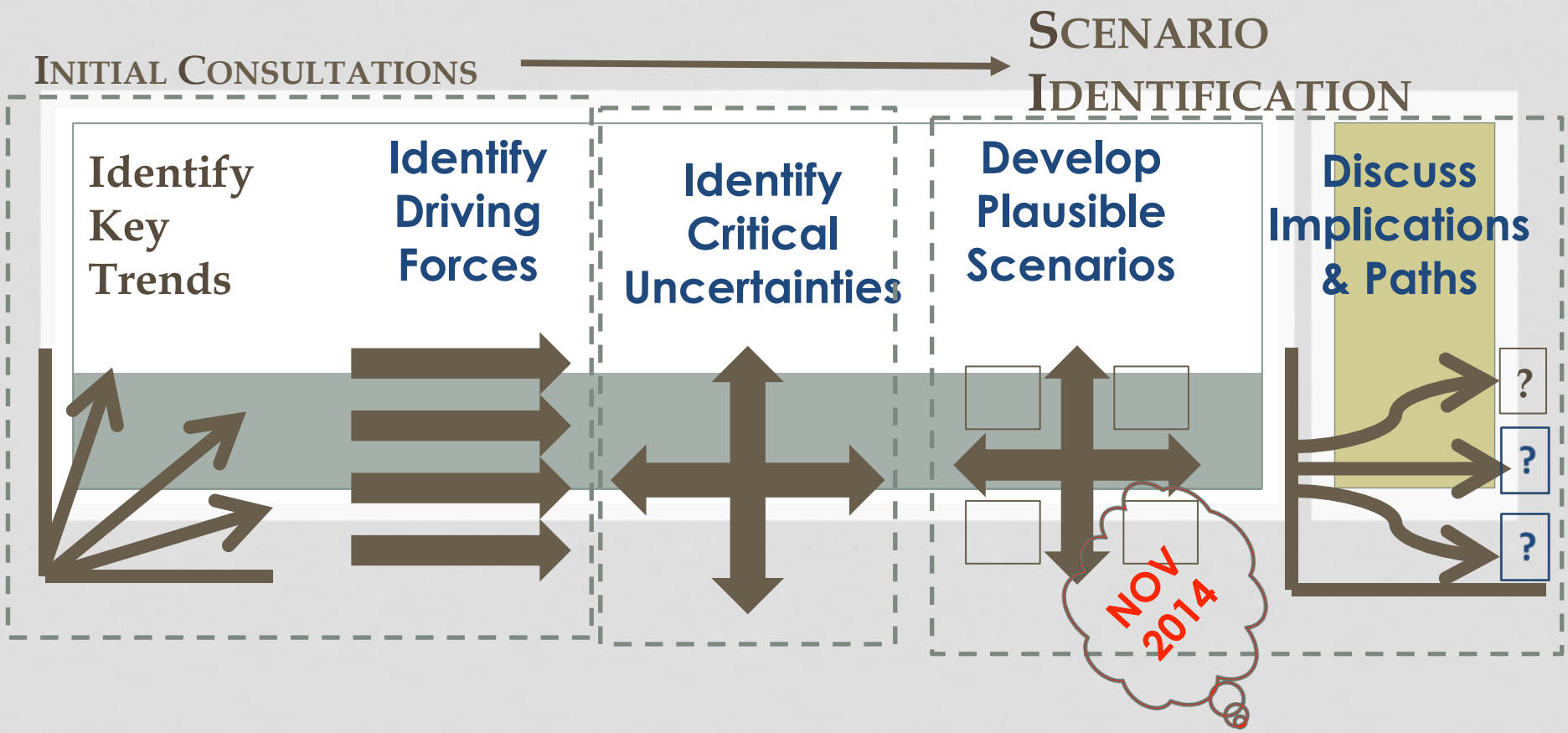
- To be effective, scenarios must be:
  - Recognizable from the present
  - Expansive/creative -- exploring new ideas
  - Relevant and significant
  - Internally consistent
  - Plausible (separated from bias, not "wishful thinking")

NSSI FOCAL QUESTION FOR SCENARIOS

"What is the future of energy development, resource extraction, and associated support activities on the North Slope and adjacent seas through 2040?"

THE SCENARIO IDENTIFICATION PROCESS

DEFINE FOCAL QUESTION AND RELEVANT TIMEFRAME
REVIEW PAST EVENTS/PRIOR KNOWLEDGE



RESEARCH THE DRIVING FORCES

- Define the major sources of change that affect the future – whether those forces are predictable or not
- Some are relatively predictable:
  - Local demographics
  - Local uses of the land and water (traditional)
- Some are not predictable:
  - Global economy
  - Future availability of funding for infrastructure
  - Global and regional climate changes
  - Political stability
  - Technological innovation

DRIVERS OF CHANGE CAN ALSO BRING UNCERTAINTY AT DIFFERING SCALES

- **Climate Change (Global, National, Regional and Local)**
- **Security (Local, Regional, National, Global)**
- **Social Challenges (Traditional Lifestyle)**
- **Economics (Local, Regional, National, Global)**
- **Political (Local, Regional, National, Global)**
- **Shifting Demographics (Local, Regional, National)**
- **Transportation (Limited, Seasonal)**
- **Infrastructure (Limited w/Challenges)**
- **??????????**

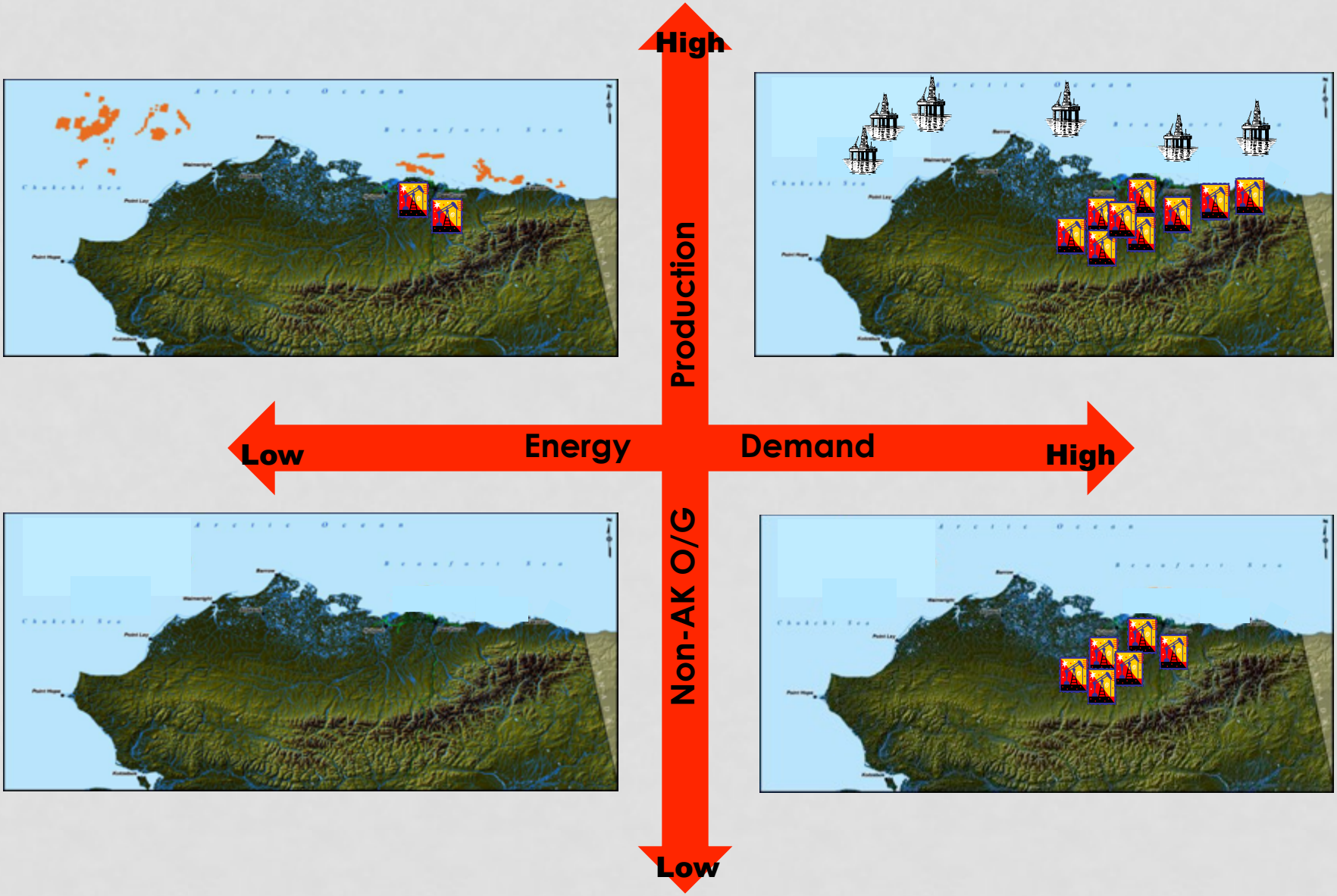
DRIVERS FORCES/UNCERTAINTIES

- Alaska Revenue and State Economy
- Climate Change
- Community Health and Food Security
- Development Infrastructure
- Endangered Species
- Environmental Disasters
- Erosion
- Global Political Environment
- Local Economy
- New Technology
- Oil/Gas Prices/ Demand
- Other Commodities
- Permafrost
- Regulatory Environment
- Sea Ice

DETERMINE PATTERNS OF INTERACTION BETWEEN DRIVING FORCES AND UNCERTAINTIES

- Consider how the driving forces could combine to determine ***future*** conditions.
- Determining patterns of interaction between driving forces lead to a matrix that identifies the driving forces as a pair of opposites with a potential positive or negative outcome
- Example…..

Example “Scenarios” for Oil/Gas Development



NSSI SCENARIOS TIMELINE

- **Nov 2013 -Jan 2014**
  - Project Team Meetings
  - ID initial stakeholders as Scenarios Consultative Group (SCG)
- **Jan 2014 – Mar 2014**
  - Initial meeting
  - Collect geospatial data
  - Synthesize background material
  - Coordinate with many entities that hold information
- **Mar 2014 – May 2014**
  - Develop factsheets/web materials
  - Provide background materials to SCG and OG for review
- **Jun 2014 – Nov 2014**
  - Begin work with SCG and expanded participants
  - Continue to provide background materials
- **Nov 2014**
  - Scenarios Formulation Workshop
- **Nov 2014 – Mar 2015**
  - Workshop summary
  - Initial scenarios analysis
- **April 2015**
  - Scenarios Implications Workshop
- **April 2015 – June 2015**
  - Consolidation & synthesis of stakeholder input
  - Prepare final scenarios for stakeholder input
- **June 2015**
  - Communicate strategies for scenarios & draft final report
- **August 2015**
  - Research and Monitoring Strategies Workshop

September 2015: Final Report and Final Products

SCENARIOS PROJECT TEAM

North Slope Science Initiative

John Payne, Director
jfpayne@mtu.edu
jpayne@blm.gov

Denny Lassuy, Deputy Director
dlassuy@blm.gov

GeoAdaptive, LLC

Juan Carlos Vargas-Moreno, Partner
jcvargus@geoadaptive.com

Barry Fradkin, Analyst
bfadkin@geoadaptive.com

University of Alaska Fairbanks

Olivia Lee, Research Associate
Olivia@gi.alaska.edu

Hajo Eicken, Professor
heicken@alaska.edu

Amy Lovecraft, Associate Professor
allovecraft@alaska.edu


www.northslope.org/scenarios/