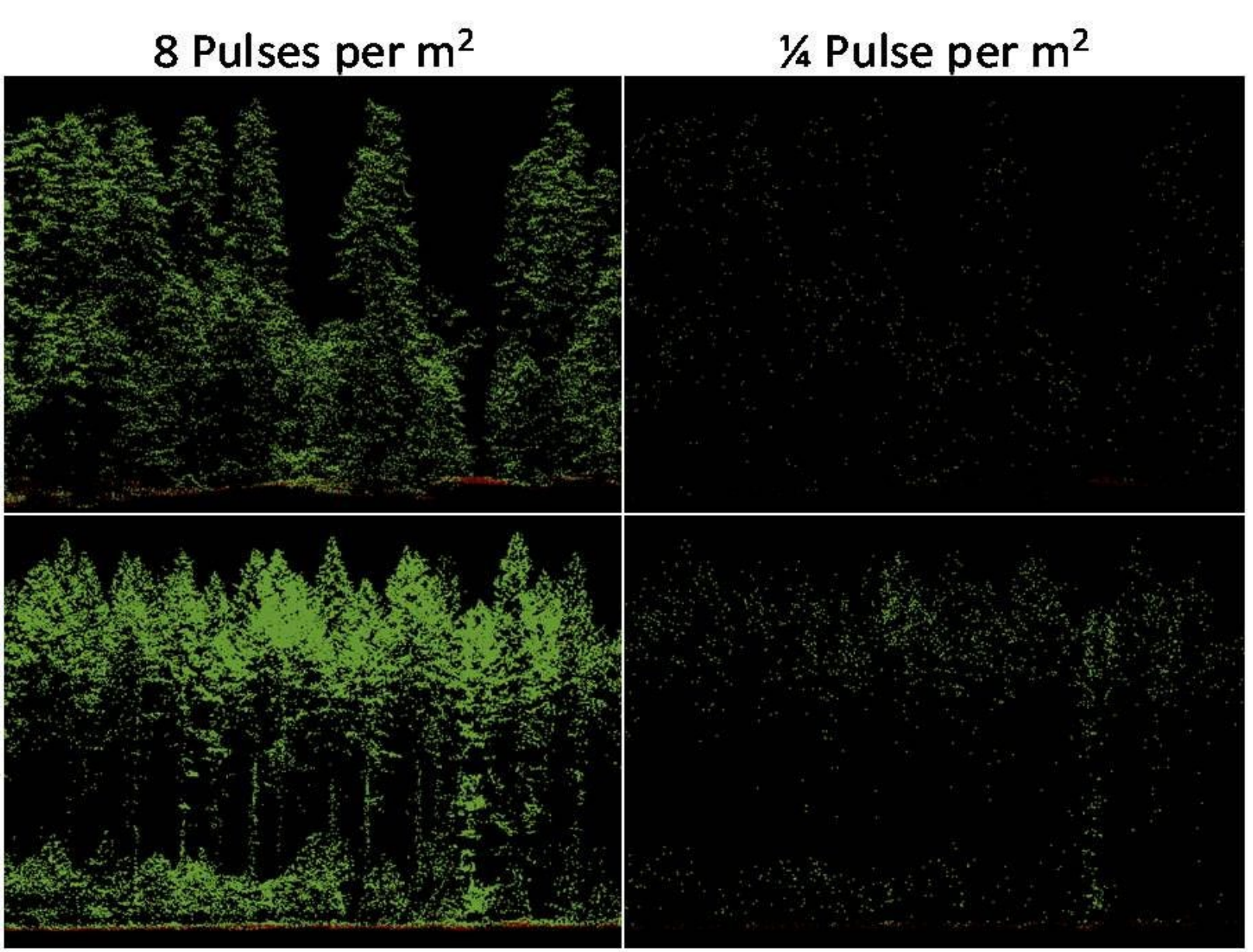
BLM's LiDAR Strategy

- **Acquire**
  - BLM Cooperates with the Oregon LiDAR Consortium
  - Current Program Focused in Western Oregon
  - First LiDAR Acquisition 90+ percent complete
  - Install Ground Correlation Plots
- **Process**
  - Currently Completed by Contractors
  - Will shift to Internal BLM Processing
  - Increased Need to Train BLM Staff
- **Inform**
  - Data Currently Stored Off-Line
  - Will Shift to Greater Access
  - Will Require Increased IT Infrastructure

Data Acquisition



Common Forestry Specifications

- High Pulse Density (>6 pulses/sq m.)
- 50% side-lap (reduced shadowing/more uniform pulse densities)
- Narrow Field-of-View (≤ 30^{o})
- High Relative Accuracy
- Leaf-on/Leaf-off considerations
- Normalized Intensities

Acquisition Coverage

Coverage for All Lands in Western Oregon from Coast east to Forest Service Boundary in Cascade Mountains

(Put Coverage Map Here)

Data Processing

- Advanced commercial software tools available for analysis and visualization of LiDAR point cloud data.
  - Most high end software can now handle point cloud data (ArcGIS, ENVI, ERDAS, Ecognition)
- Powerful software tools available at little or no cost:
  - USFS Fusion
  - LAS Tools
  - Open Source Libraries
- Improved Processing Techniques for Vegetation Analysis.
  - Object Based Image Analysis
  - Voxel Approaches (volumetric analysis)
  - Ray Tracing Techniques (crown estimation)

Data Processing / Staff Training

- Reliance on Contractors has Slowed Staff Skills Development
- Many Needed Skills Will Be Developed Internally
  - Data Processing is a Custom BLM Operation
- Training will Involve Internal and External Courses
  - Internal Training will Require BLM Instructors Teaching use of BLM Methodology

Inform / Data Storage and Retrieval

- Raw LiDAR Data Stores as Log ASCII Standard (.LAS) Files
- Approximately 50 TB of Raw Date for Western Oregon
- Storage Access and Cost are Strong Considerations
- IT Infrastructure Upgrade (Potential)
  - Dedicated LiDAR / Inventory Hard Drive
  - Process Data on the Cloud but Store Internally
- Concentrate on Use of GIS to retrieve and Use Products Derived from LiDAR and Related Data, i.e. Ground Plots

Inform Managers / NEPA

- Rely on GIS and Internal GIS Staff, i.e. BLM will not Hire LiDAR Specialists
- LiDAR and LiDAR Derived Products Should Become Common GIS Available Products
- Ultimately will Determine the Need / Use of Multitrmporal LiDAR Flights
- Will Continue Research on the Use of LiDAR to Inform Multiple Resource Decisions