

FEDERAL FUNDING FOR: Ortho Imagery and Topographic Data

and

Floodplain Mapping Update

2011 Municipal Technology Conference
Bangor Civic Center

Prepared by: AND

Dan Walters, USGS
Maine Geospatial Liaison
Augusta, Maine 04333

Prepared by:
Joseph Young
Maine State Planning Office
Augusta, Maine 04333

Oxford County

- New Digital Mapping
 - Maps Effective July 7, 2011
 - New studies done for parts of:
 - Bethel
 - Hiram
 - Otisfield
 - Paris

Kennebec County

- New Digital Maps Have been Published
 - The effective date is June 16, 2011
- No new studies
- Some re-delineation of special flood hazard areas on the Kennebec river.

Cumberland County

- Preliminary maps have been withdrawn
 - Communities are evaluating FEMA Risk MAP Program
 - FEMA is planning on using the communities consultant's methodology to re-map all coastal flood hazard areas
- Communities may partner with FEMA in its Risk MAP program

York County

- Preliminary maps have been withdrawn
 - Communities are evaluating FEMA Risk MAP Program
 - FEMA is planning on using the communities consultant's methodology to re-map all coastal flood hazard areas
- Communities may partner with FEMA in its Risk MAP program

Androscoggin County

- New Topographic Acquisition
 - Covers all county towns
 - Capable of producing 2' contours
 - Available from the USGS Center for LiDAR Information Coordination and Knowledge (CLICK)
 - All new mapping
 - 140 Miles of Detailed Study
 - 191 miles of Approximate study
 - 111 miles of redelineation

Future of Floodplain Mapping

Watershed Based Studies

FEMA Focus

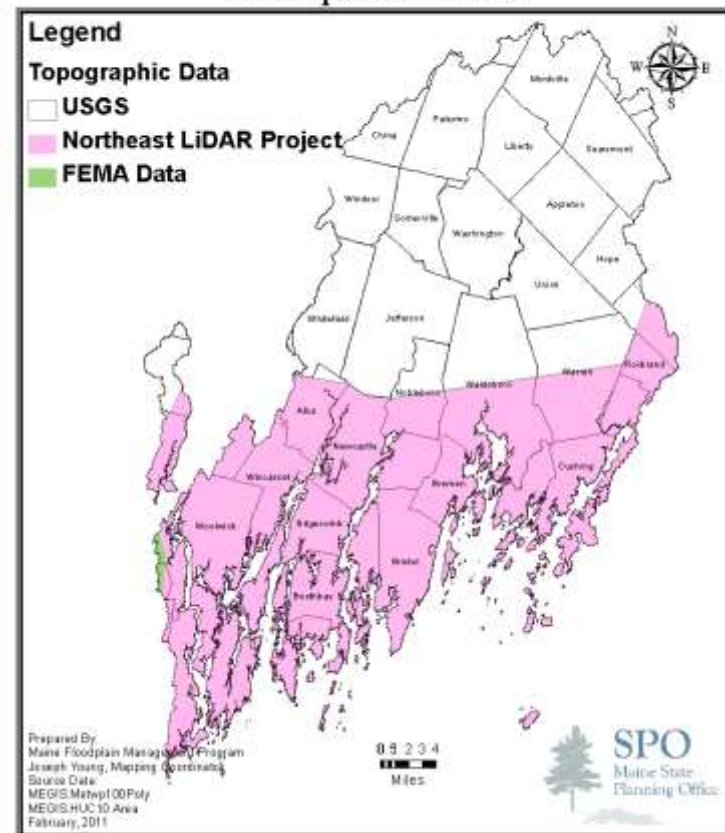


- Coastal Watersheds
 - Mid Coast
 - Down East

Mid-Coastal Watersheds

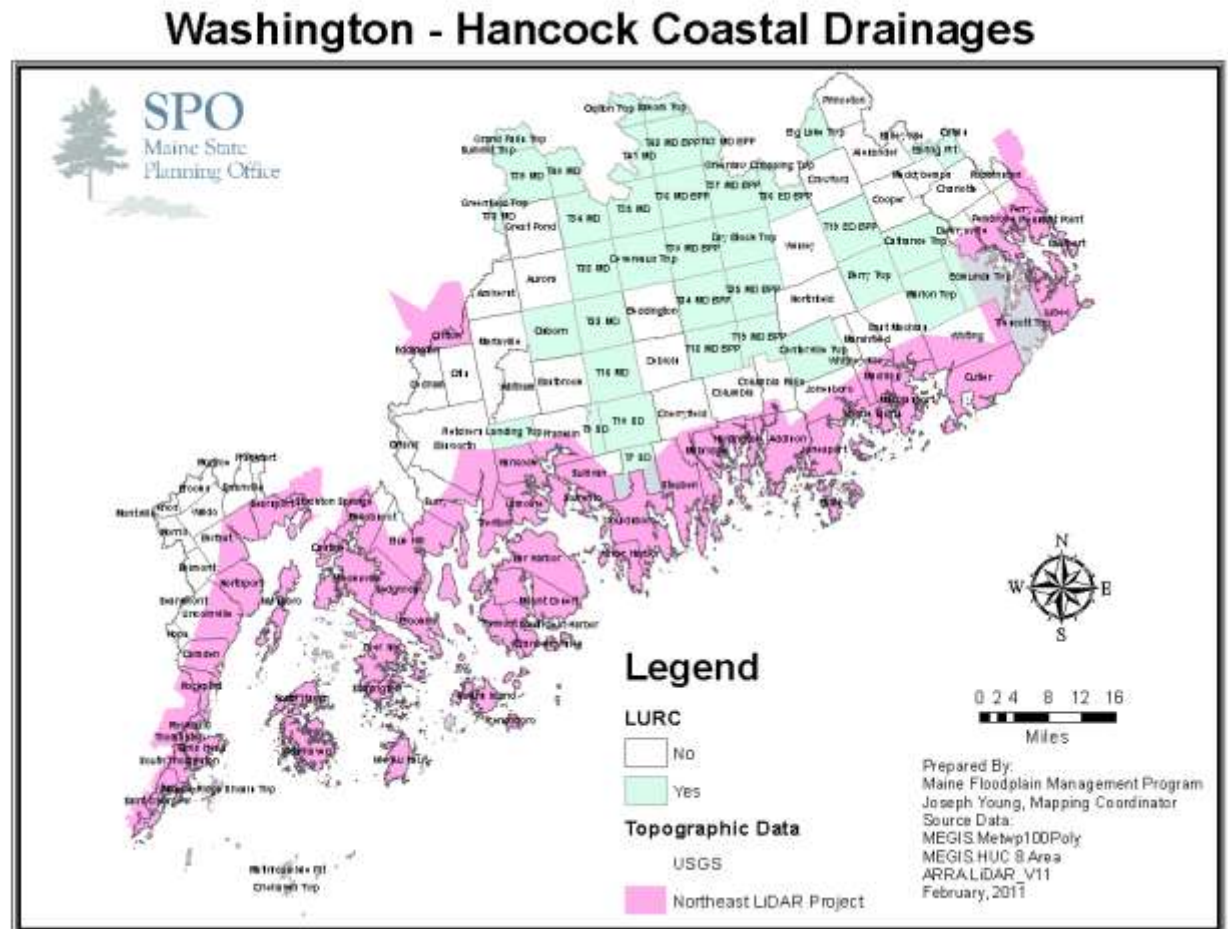
- Primary Counties Involved
 - Sagadahoc
 - Lincoln
 - Knox

Maine Mid-Coastal Watershed
Sheepscot River



Washington - Hancock Coastal Watersheds

- Primary Counties Involved
 - Waldo
 - Hancock
 - Washington



Prerequisite for Accurate Floodplain Mapping

- Accurate Base Maps
- High Resolution
Topography
 - 2 foot contours

Ortho Imagery

- Maine GeoLibrary Board Acquisition Plan
 - State Wide Scope
 - Economies of Scale
 - Low Cost to Counties
- Full Report available
- <http://www.maine.gov/geolib/orthophotography.htm>



Sample Purchase

- Two County Acquisition
- Total Cost \$180,000
- Split Cost Three Ways
 - \$30,000 County 1
 - \$30,000 County 2
 - \$60,000 State
 - \$60,000 Federal Sources
- Base Purchase Resolution
 - 2' Resolution
- Buy Up Potential
 - Group of Communities
 - Can buy up to higher resolution data

LiDAR Technology

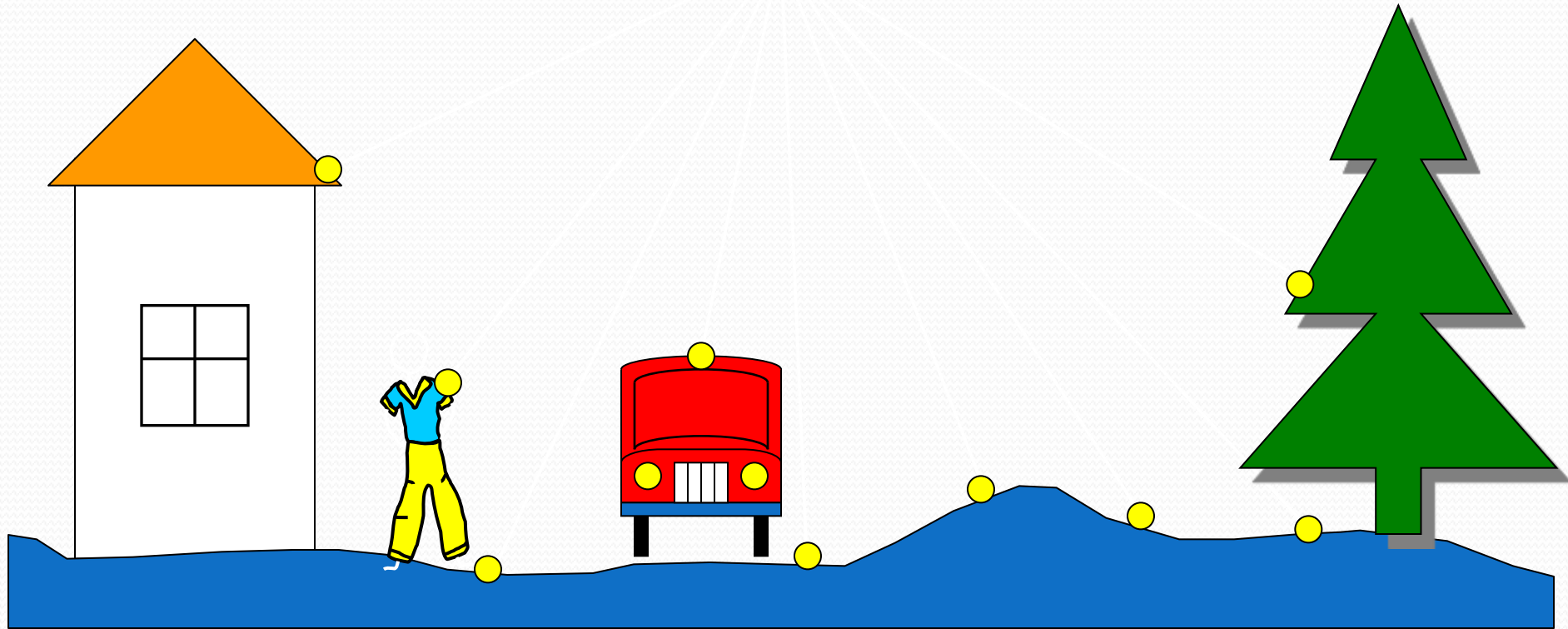
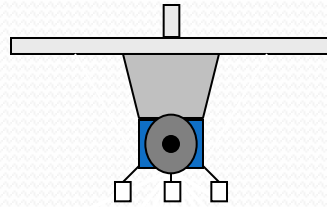
- Most Economical Means for Obtaining New Topographic Data
 - First introduced in the 1990's
 - Exponential improvement in the technology
 - Exponential decline in costs for acquisition
- Northeast Coastal Lidar Project Cost
 - Less than \$200/Sq. Mi.

LiDAR Basics

- ▣ Airborne Light Detection And Ranging
- ▣ Very fast, accurate and cost effective technology to measure and quantify reflective surfaces (elevations)
- ▣ Systems Components
 - Aircraft
 - Crew (Pilot & Instrument Operator)
 - Laser w/ mirror –
 - Uses its own energy source (NIR red laser)
 - Direct (active) acquisition of terrain
 - Allowing day or night operation
 - GPS Receivers (Aircraft & Ground)
 - Provides aircraft position
 - Inertial Measurement Unit
 - Provides aircraft orientation & direction
 - Post Processing Software & Specialized Technicians

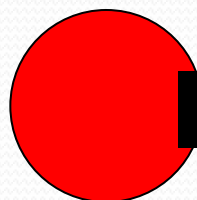


LIDAR Measures Objects From “Line of Sight”



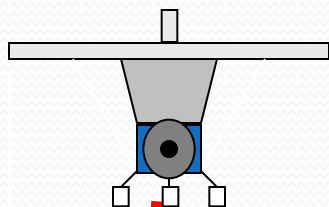
LIDAR 1st and Last Return

FOOTPRINT



~ 2 ft

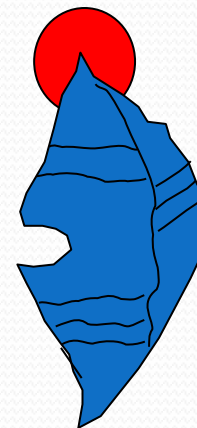
~50
cm



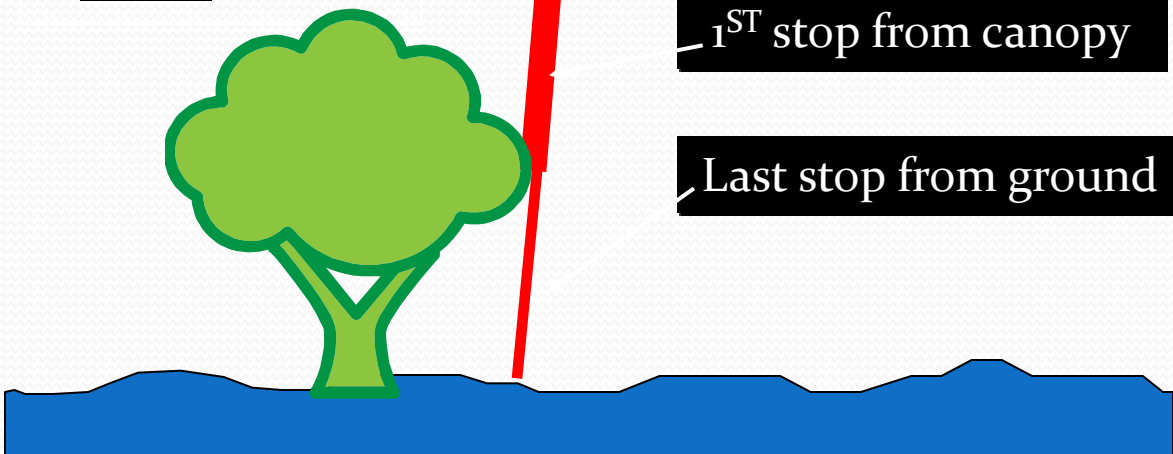
1ST stop from canopy

Last stop from ground

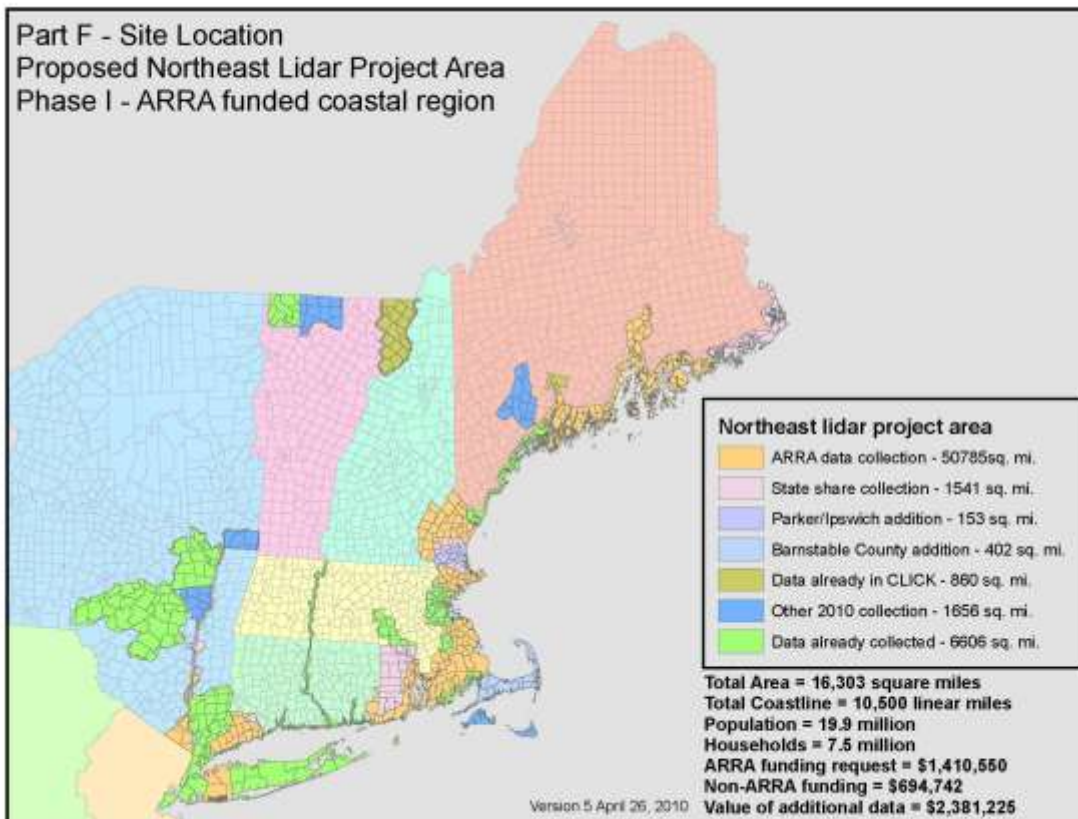
TOP/MAP VIEW



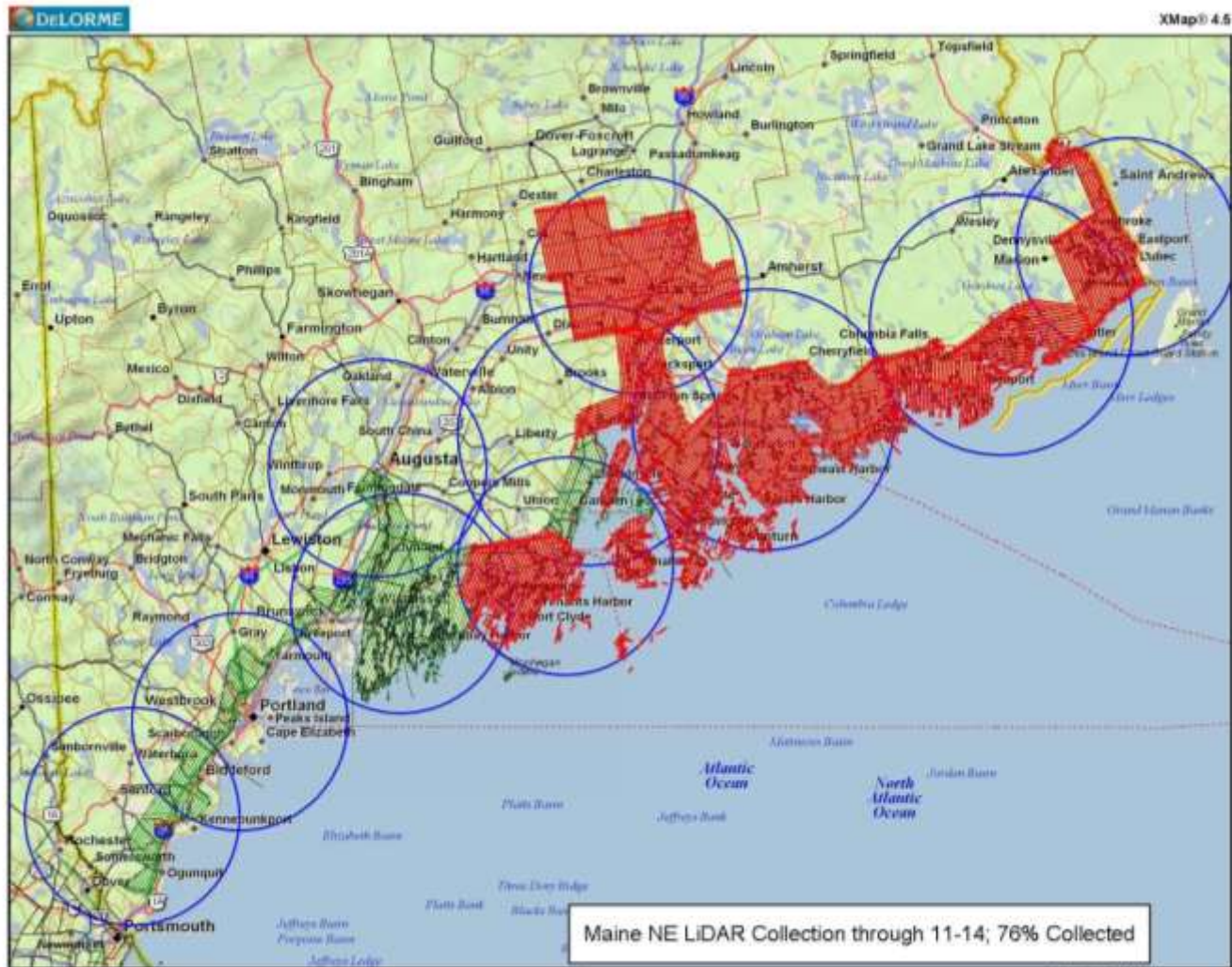
1ST STOP HITS LEAF,
LAST STOP HITS
GROUND



Northeast Costal LiDAR Project



CURRENT STATUS



Maine NE LIDAR Collection through 11-14; 76% Collected

How We Did It

- Maine Geo-Library
 - \$20,000 conditional
- Acadia National Park
- ME. DEP
- ME. SPO
- USDA/NRCS Maine Office
- Maine Coast Heritage Trust
- The Nature Conservancy
- Total Raised In Maine
 - \$263,000



Scope of ARRA Project

- ARRA Grant Funds
 - \$1,410,550
- Matching and Partnership Funds
 - \$1,310,000
- Maine Participation
 - New ARRA Data
 - 1,630 sq./mi.
 - Partners Data Acquired
 - 1,263 sq./mi.
 - Already Collected
 - 926 sq./mi.

Project Deliverables

- Full Point Cloud (raw data)
- Digital Elevation Model
 - Bare Earth
 - 3.0 Meter Grid
 - Hydro Flattened
 - IMG Format
- Meta data – FGDC Compliant

Key to Successful Project: LiDAR or Ortho Imagery

- LOCAL SUPPORT
 - County and State
- LARGE SCALE PROJECTS
 - Take Advantage of Economies of Scale
- ENLIST OTHER PARTNERS
 - USGS
 - FEMA
 - USDA
 - Other Federal and Non-Profit agencies

LONG TERM BENEFITS

- Spin Off benefits of LiDAR Technology
 - Storm Water Management
 - Storm Drains
 - Culvert sizing
 - Road Construction Planning
 - Forest Biomass Estimating
 - Economic Development
 - Lower Costs for Preliminary Site Development Analysis
 - Report to Legislature on LiDAR benefits
 - <http://www.maine.gov/spo/flood/docs/interagencycoop.pdf>
 - Dam Failure Analysis



FEDERAL STATE AND LOCAL PARTNERSHIPS

Key to success for all of us

QUESTIONS

