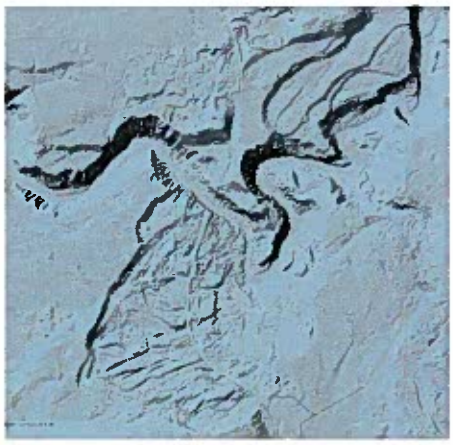
WASHINGTON STATE DEPARTMENT OF
Natural Resources
Doug Sutherland - Commissioner of Public Lands

Statewide LiDAR Collection

Collecting statewide LiDAR data is essential to environmental, economic, and public safety planning, and policy making needs

Issue

LiDAR is an acronym for Light Detection And Ranging. LiDAR systems mounted in airplanes use lasers to illuminate the ground below the aircraft. LiDAR systems are capable of producing the most accurate topographic elevation data of the earth's surface.



This high resolution data will revolutionize the way scientists, geologists, engineers, and emergency management personnel accomplish their work.

- LiDAR data is not available for 85% of the area of Washington State.
- There is no central statewide LiDAR data collection effort. Private firms and Local and State agencies collect data for their immediate needs only. There are inconsistent standards and gaps in data collection, resulting in inefficiency and higher costs

Background

Statewide LiDAR collection to a uniform standard will provide a seamless Digital Elevation Model network in conjunction with the Height Modernization effort and GPS control.

LiDAR can be used for a myriad of planning, policy and decision making venues. Including: (Bare-earth topography)

- Hydrography: Stream ID/location, Stream Gradient, Basins, Drainage models, Floodplain mapping, Channel identification, blockages. The recent Lewis and Grays Harbor flood area could have been mapped prior to the storm event by using LiDAR derived data in hydrologic models.
- Geology: Landslide ID, Fault ID Earthquake Hazards, Tsunami inundation, slope stability, geologic mapping, geomorphology. Unstable slopes and landslide hazards, especially those under dense vegetation found in Washington can be mapped more accurately and the hazard classified with greater certainty.
- Forest Management: Road planning/layout, harvest system planning, Timber sale planning, Recreation site planning, urban forestry planning.
- Emergency Management: Flood, Wildfire behavior predictions, landslide hazards, tsunami evacuations, Volcanic Hazard (lahars – mudflows).
- Planning: Transportation planning and construction, land development, wind pattern predictions for wind power, utility planning (power, gas), Communications planning (microwave, cellular), water storage and irrigation.

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Currently, LiDAR data exists for 15% of the state of Washington. The cost to collect LiDAR for the remaining 70% of the state is $21 million (It is currently impractical to collect LiDAR data for 15% of the state because of steep topography.)

A cooperative approach is proposed to fund the collection of LiDAR data for the remainder of the state with potential Public/Private partners and a legislative appropriation.

Potential partners include:
Federal – USGS, USFS, NRCS, BLM, BOR, BIA, FEMA, DHS, DOE, FSA.
State – DNR, WDFW, Ecology, DOT, Agriculture, Emergency Mgmt., Parks, Counties, Tribes, Public Utilities.
Private – Forest Products Companies, Large landowners, Utility Companies, Communications Companies, Developers.

The Department of Natural Resources mapping staff is available to present information and practical applications, if desired. Also, additional information pertaining to LiDAR and its applications are available at http://www.lidarcomm.com/ and http://pugetsoundlidar.ess.washington.edu/

Legislative Proposal

RCW 58.22/24 defines the DNR as the agency responsible for providing state base maps and establishes the Surveys and Maps account to provide funding to this purpose.

It is proposed that the Legislature appropriate $12 million over a 6 year period to be used with matching funding from private and other public sector entities to collect LiDAR data for use in environmental, economic, and public safety planning efforts.

Desired Outcome

The Public, Private firms and Businesses, as well as Federal, State, and Local agencies will provide the additional 50% funding to have LiDAR data collected and available for planning, policy and decision making venues.

The seed money provided by the Legislature will result in a statewide, coordinated effort to collect and have this data available. This is the most efficient and effective way to leverage state resources and gain funds from other partners. DNR has accomplished this with other key data sets (transportation, cadastre, hydrography and imagery) that are now used and available statewide.

All these data sets have allowed Washington organizations to make solid planning and resource decisions.

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