First Regular Session
Seventieth General Assembly
STATE OF COLORADO

INTRODUCED

LLS NO. 15-0277.01 Esther van Mourik x4215 **HOUSE BILL 15-1129**

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House Committees
Agriculture, Livestock, & Natural Resources
Appropriations

Senate Committees

A BILL FOR AN ACT

CONCERNING DISASTER PREDICTION AND DECISION SUPPORT SYSTEMS BY THE DEPARTMENT OF PUBLIC SAFETY, AND, IN CONNECTION THEREWITH, MAKING AN APPROPRIATION.

Bill Summary

(Note: This summary applies to this bill as introduced and does not reflect any amendments that may be subsequently adopted. If this bill passes third reading in the house of introduction, a bill summary that applies to the reengrossed version of this bill will be available at http://www.leg.state.co.us/billsummaries.)

The bill requires the division of fire prevention and control to partner with an organization, by entering into a contract, to establish, support, customize, and maintain a Colorado wildland fire prediction and decision support system.

The bill requires the division of homeland security and emergency

management to partner with an organization, by entering into a contract, to establish, support, customize, and maintain a Colorado flood prediction and decision support system.

The bill specifies that the organization must be a nonprofit Colorado-based research organization focused on research, education, and advanced technology development for atmospheric and related earth sciences.

The bill also requires each division to assist in the coordination of users across the state to further refine the systems to best meet all Colorado users' unique requirements.

The bill allows each division to seek and accept gifts, grants, or donations to assist in the development of the Colorado flood prediction and decision support system and the Colorado wildland fire prediction and decision support system.

Be it enacted by the General Assembly of the State of Colorado:

SECTION 1. Legislative declaration. (1) The general assembly hereby finds and declares that:

(a) Floods and wildland fires are exceedingly complex phenomena. Despite rigorous training, abundant resources, and weather forecasts, even seasoned responders may be tragically unprepared for complex, unpredictable, and dramatic flood and fire behavior. Human intelligence cannot integrate all the interacting factors to anticipate when weather and other factors will combine with topography to dramatically amplify flood and fire behavior.

(b) Wildland fires can degrade air quality for days and even weeks across large areas, affecting the health of thousands of people located far from the flames. After a fire, flooding and water quality threats also increase.

(c) Studies suggest that severely damaging fire seasons in the United States could occur two to four times more often by midcentury. Colorado's most destructive fire on record struck near Colorado Springs

in June 2013, resulting in two deaths and the destruction of more than five hundred homes.

(d) Colorado's geography, with steep and undulating topography, combined with weather events such as slow moving storms or rapid spring snow melt, exacerbates the effects of flooding. In instances when the ground is frozen or already saturated with water, risks are increased. If a flooding event is severe enough, existing observation stations can be harmed or destroyed. The lack of on-the-ground information further hampers resource and emergency managers' abilities to obtain accurate information that is required to mitigate damages from such events.

(e) Inaccurate prediction of and insufficient preparation for flooding events can also result in substantial loss of life and property. For example, the September 2013 floods affecting Denver, Boulder, and parts of northern Colorado resulted in four deaths, left many people homeless, and cost individuals, businesses, and governments nearly three billion dollars. Improving the state's flood prediction capabilities would substantially reduce both the risk and cost of flooding, aid in emergency planning, and shorten response time.

(f) Since 2000, wildland fire suppression in the United States has cost more than two billion dollars per year. According to some economists, the economic impact from natural resource loss, land rehabilitation, and lost business and recreation are far greater, as much as ten to fifty times the fire suppression costs. Some of the contributing factors to these increased costs include:

(I) Increased development in the wildlands, thereby increasing the population living in the wildland-urban interface;

(II) A century of fire suppression practices that have altered the

state of the wildlands; and

(III) Climate variability such as drought and early snow melt overlapping with weather events such as Front Range windstorms that favor large fire growth.

(g) Even with federal assistance, the cost to the state of the 2013 flooding event was significant. Costs not covered by insurance, a significant proportion of the total, included repair or rebuilding of damaged homes and businesses located in the flood plain and, in the case of local governments without insurance, included infrastructure damage to roads and bridges.

(h) The capability to improve predictions about the weather and local-scale hydrologic systems could have provided better estimates of flood risks to local residents in real time. Timely provision of these risk estimates would have provided resource and emergency managers with better information that they and the public could have used to improve the response to a very dangerous and costly flood event.

(i) Being able to predict flood and fire behavior simultaneously with weather is exceedingly important. It is understood that decision makers need reliable, accurate, up-to-the-minute, state-of-the-art, tailored, and geo-referenced current and predicted information that is easily accessible at all times. Timely information allows decision makers to better judge current conditions, future trends, transitions in wind speed or direction, and the potential for rapid growth and extreme fire behaviors.

(j) Prediction systems are needed for both floods and wildland fires that respectively predict flood and fire behavior and that couple numerical weather prediction with flooding modules and wildland fire modules to predict flood and fire behavior. Advanced flood prediction

and fire behavior technologies developed and tested in Colorado would be extraordinarily helpful to Colorado.

(2) Now, therefore, it is the general assembly's intent in enacting House Bill 15-___ to further support the development of flood and fire prediction and decision support systems and to ensure that such systems are tailored to meet the state's needs.

SECTION 2. In Colorado Revised Statutes, **add** 24-33.5-1232 as follows:

24-33.5-1232. Colorado wildland fire prediction and decision support system - definitions - development - contract. (1) AS USED IN THIS SECTION, UNLESS THE CONTEXT OTHERWISE REQUIRES:

(a) "ORGANIZATION" MEANS AN ORGANIZATION THAT IS ORGANIZED AS A NOT-FOR-PROFIT ENTITY OR HAS OBTAINED TAX-EXEMPT STATUS UNDER SECTION 501 OF THE FEDERAL "INTERNAL REVENUE CODE OF 1986", AS AMENDED, AND IS A COLORADO-BASED RESEARCH ORGANIZATION FOCUSED ON RESEARCH, EDUCATION, AND ADVANCED TECHNOLOGY DEVELOPMENT FOR ATMOSPHERIC AND RELATED EARTH SCIENCES. THE ORGANIZATION MUST HAVE THE ABILITY TO PROVIDE ENVIRONMENTAL PREDICTIONS AND CONDUCT A WIDE RANGE OF HYDROLOGIC AND WEATHER SCIENCE. THE ORGANIZATION MUST ALSO HAVE STRONG ENVIRONMENTAL MODELING AND RELATED APPLIED RESEARCH FUNCTIONALITY, INCLUDING ROBUST TIES TO THE STATE AND NATIONAL UNIVERSITY AND SCIENCE COMMUNITY SO AS TO OBTAIN ADDITIONAL EXPERTISE AND PARTNERING AS NEEDED.

(b) "SYSTEM" MEANS THE COLORADO WILDLAND FIRE PREDICTION AND DECISION SUPPORT SYSTEM.

(c) "USERS" MEANS ALL GOVERNMENT ENTITIES.

(2) (a) BEGINNING WITH THE 2015-16 STATE FISCAL YEAR, THE DIVISION, THROUGH ITS CENTER OF EXCELLENCE FOR ADVANCED TECHNOLOGY AERIAL FIREFIGHTING CREATED IN SECTION 24-33.5-1228 (2.5), SHALL ESTABLISH, SUPPORT, CUSTOMIZE, AND MAINTAIN A COLORADO WILDLAND FIRE PREDICTION AND DECISION SUPPORT SYSTEM.

(b) THE SYSTEM MUST BE SCIENCE BASED AND ABLE TO:

(I) IMPROVE THE ABILITY OF THE DIVISION TO PREDICT WILDLAND FIRE BEHAVIOR BY TAKING ADVANTAGE OF TECHNOLOGIES EMERGING FROM AN ORGANIZATION;

(II) IMPROVE THE SAFETY AND EFFICIENCY OF THE DIVISION'S OPERATIONS;

(III) IMPROVE FLIGHT OPERATIONS OF THE COLORADO FIREFIGHTING AIR CORPS CREATED IN SECTION 24-33.5-1228 BY PROVIDING AVIATION WEATHER HAZARD INFORMATION SUCH AS UPDRAFTS, DOWNDRAFTS, ROTORS, AND WIND SHEAR;

(IV) ENHANCE MECHANISMS FOR COMMUNICATING WILDLAND FIRE HAZARD INFORMATION TO USERS; AND

(V) INTEGRATE WILDLAND FIRE BEHAVIOR INFORMATION WITH PREDICTION TECHNOLOGIES INTO INFORMATION INFRASTRUCTURES THAT SERVE USERS.

(c) THE DIVISION SHALL ASSIST IN THE COORDINATION OF USERS ACROSS THE STATE TO FURTHER REFINE THE SYSTEM TO BEST MEET ALL COLORADO USERS' UNIQUE REQUIREMENTS. THESE USER-SPECIFIED REQUIREMENTS MUST BE ADDED TO THE SYSTEM TO ACCOUNT FOR THE CHARACTERISTICS OF REGIONAL GEOGRAPHY AND TO ENSURE THAT THE SYSTEM PROVIDES THE CRITICAL INFORMATION NECESSARY FOR MAKING THE BEST POSSIBLE RESOURCE MANAGEMENT DECISIONS DURING EXTREME

FIRE EVENTS IN THE STATE.

(d) NOTWITHSTANDING THE REQUIREMENTS OF ARTICLES 101 TO 112 OF THIS TITLE, NO LATER THAN DECEMBER 1, 2015, THE DIRECTOR OF THE DIVISION SHALL ENTER INTO A CONTRACT TO PARTNER WITH AN ORGANIZATION FOR THE ESTABLISHMENT, SUPPORT, CUSTOMIZATION, AND MAINTENANCE OF THE SYSTEM.

(e) AFTER THE CONTRACT IS ENTERED INTO, THE DIVISION AND THE ORGANIZATION SHALL FURTHER DEVELOP THE SYSTEM BY INCLUDING DETAILED USER REQUIREMENTS AND USER-CENTRIC VERIFICATION METRICS AND METHODS AND SHALL BUILD A COLORADO-SPECIFIC FRAMEWORK THAT INCLUDES:

(I) AUTOMATED DATA INGESTION OF REAL-TIME WEATHER, UP-TO-DATE FUEL INFORMATION, AND FIRE DETECTION DATA;

(II) THE CAPABILITY TO EASILY CONFIGURE A FIRE'S LOCATION, DOMAIN SIZE, GRID RESOLUTION, AND FIRE IGNITION TIME; AND

(III) DATA INTERFACES AND DISPLAY APPLICATIONS THAT ALLOW USERS TO VIEW THE OUTPUT ON A VARIETY OF PLATFORMS, INCLUDING MOBILE DEVICE APPLICATIONS AND EXISTING SYSTEMS.

(3) THE DIVISION MAY SOLICIT AND ACCEPT MONETARY AND IN-KIND GIFTS, GRANTS, AND DONATIONS FROM PRIVATE OR PUBLIC SOURCES FOR THE PURPOSES OF THIS SECTION. ALL PRIVATE AND PUBLIC MONEYS RECEIVED BY THE DIVISION THROUGH GIFTS, GRANTS, OR DONATIONS MUST BE TRANSMITTED TO THE STATE TREASURER, WHO SHALL CREDIT THE SAME TO THE COLORADO FIREFIGHTING AIR CORPS FUND CREATED IN SECTION 24-33.5-1228. THE GIFTS, GRANTS, OR DONATIONS CREDITED TO THE FUND FOR THE PURPOSES OF THIS SECTION ARE CONTINUOUSLY APPROPRIATED TO THE DIVISION FOR THE DIRECT AND

INDIRECT COSTS ASSOCIATED WITH THE IMPLEMENTATION OF THIS SECTION.

SECTION 3. In Colorado Revised Statutes, 24-33.5-1228, **amend** (2.5) (b) (II) (B) and (2.5) (b) (III); and **add** (2.5) (b) (IV) as follows:

24-33.5-1228. Colorado firefighting air corps - creation - powers - aircraft acquisitions required - center of excellence - Colorado firefighting air corps fund - creation - report - legislative declaration - rules. (2.5) (b) The center of excellence shall perform, but is not limited to, the following functions:

(II) Review current regular research and assessment projects to evaluate:

(B) Sustainable contracting and value propositions to determine which technologies and contract vehicles are most advantageous and cost-effective to entities performing or providing aerial firefighting; ~~and~~

(III) Review current data and documentation on science and technology relevant to aerial firefighting and make the results of the center of excellence's research and assessment projects available to persons interested in aerial firefighting effectiveness, efficiency, and sustainability, including fire managers, policy decision-makers, scientists, students, and any other requesting persons; AND

(IV) ESTABLISH, SUPPORT, CUSTOMIZE, AND MAINTAIN A COLORADO WILDLAND FIRE PREDICTION AND DECISION SUPPORT SYSTEM IN ACCORDANCE WITH SECTION 24-33.5-1232.

SECTION 4. In Colorado Revised Statutes, **add** 24-33.5-1616 as follows:

24-33.5-1616. Colorado flood prediction and decision support

system - definitions - development - contract. (1) AS USED IN THIS SECTION, UNLESS THE CONTEXT OTHERWISE REQUIRES:

(a) "ORGANIZATION" MEANS AN ORGANIZATION THAT IS ORGANIZED AS A NOT-FOR-PROFIT ENTITY OR HAS OBTAINED TAX-EXEMPT STATUS UNDER SECTION 501 OF THE FEDERAL "INTERNAL REVENUE CODE OF 1986", AS AMENDED, AND IS A COLORADO-BASED RESEARCH ORGANIZATION FOCUSED ON RESEARCH, EDUCATION, AND ADVANCED TECHNOLOGY DEVELOPMENT FOR ATMOSPHERIC AND RELATED EARTH SCIENCES. THE ORGANIZATION MUST HAVE THE ABILITY TO PROVIDE ENVIRONMENTAL PREDICTIONS AND CONDUCT A WIDE RANGE OF HYDROLOGIC AND WEATHER SCIENCE. THE ORGANIZATION MUST ALSO HAVE STRONG ENVIRONMENTAL MODELING AND RELATED APPLIED RESEARCH FUNCTIONALITY, INCLUDING ROBUST TIES TO THE STATE AND NATIONAL UNIVERSITY AND SCIENCE COMMUNITY SO AS TO OBTAIN ADDITIONAL EXPERTISE AND PARTNERING AS NEEDED.

(b) "SYSTEM" MEANS THE COLORADO FLOOD PREDICTION AND DECISION SUPPORT SYSTEM.

(c) "USERS" MEANS ALL GOVERNMENT ENTITIES.

(2) (a) BEGINNING WITH THE 2015-16 STATE FISCAL YEAR, THE DIVISION SHALL ESTABLISH, SUPPORT, CUSTOMIZE, AND MAINTAIN A COLORADO FLOOD PREDICTION AND DECISION SUPPORT SYSTEM.

(b) THE SYSTEM MUST BE SCIENCE BASED AND ABLE TO:

(I) IMPROVE THE ABILITY OF THE DIVISION TO PREDICT FLOOD BEHAVIOR BY TAKING ADVANTAGE OF TECHNOLOGIES EMERGING FROM AN ORGANIZATION;

(II) IMPROVE THE SAFETY AND EFFICIENCY OF THE DIVISION'S OPERATIONS;

(III) ENHANCE MECHANISMS FOR COMMUNICATING FLOOD HAZARD INFORMATION TO USERS; AND

(IV) INTEGRATE FLOOD BEHAVIOR INFORMATION WITH PREDICTION TECHNOLOGIES INTO INFORMATION INFRASTRUCTURES THAT SERVE USERS.

(c) THE DIVISION SHALL ASSIST IN THE COORDINATION OF USERS ACROSS THE STATE TO FURTHER REFINE THE SYSTEM TO BEST MEET ALL COLORADO USERS' UNIQUE REQUIREMENTS. THESE USER-SPECIFIED REQUIREMENTS MUST BE ADDED TO THE SYSTEM TO ACCOUNT FOR THE CHARACTERISTICS OF REGIONAL HYDROLOGY AND HYDROLOGICS AND TO ENSURE THAT THE SYSTEM PROVIDES THE CRITICAL INFORMATION NECESSARY FOR MAKING THE BEST POSSIBLE RESOURCE MANAGEMENT DECISIONS DURING EXTREME FLOOD EVENTS IN THE STATE.

(d) NOTWITHSTANDING THE REQUIREMENTS OF ARTICLES 101 TO 112 OF THIS TITLE, NO LATER THAN DECEMBER 1, 2015, THE DIRECTOR OF THE DIVISION SHALL ENTER INTO A CONTRACT TO PARTNER WITH AN ORGANIZATION FOR THE ESTABLISHMENT, SUPPORT, CUSTOMIZATION, AND MAINTENANCE OF THE SYSTEM.

(e) AFTER THE CONTRACT IS ENTERED INTO, THE DIVISION AND THE ORGANIZATION SHALL FURTHER DEVELOP THE SYSTEM BY INCLUDING DETAILED USER REQUIREMENTS AND USER-CENTRIC VERIFICATION METRICS AND METHODS AND SHALL BUILD A COLORADO-SPECIFIC FRAMEWORK THAT INCLUDES:

(I) AUTOMATED DATA ACQUISITION OF REAL-TIME WEATHER, TOPOLOGY, GEOLOGY, HYDROLOGY, AND HYDROLOGIC DATA;

(II) THE CAPABILITY TO EASILY CONFIGURE DOMAIN SIZE, GRID RESOLUTION, WATER FLOW, AND FLOOD THRESHOLDS BY LOCATION; AND

(III) DATA INTERFACES AND DISPLAY APPLICATIONS THAT ALLOW

USERS TO VIEW THE OUTPUT ON A VARIETY OF PLATFORMS, INCLUDING MOBILE DEVICE APPLICATIONS AND EXISTING SYSTEMS.

(3) THE DIVISION MAY SOLICIT AND ACCEPT MONETARY AND IN-KIND GIFTS, GRANTS, AND DONATIONS FROM PRIVATE OR PUBLIC SOURCES FOR THE PURPOSES OF THIS SECTION. ALL PRIVATE AND PUBLIC MONEYS RECEIVED BY THE DIVISION THROUGH GIFTS, GRANTS, OR DONATIONS MUST BE TRANSMITTED TO THE STATE TREASURER, WHO SHALL CREDIT THE SAME TO THE DISASTER EMERGENCY FUND CREATED IN SECTION 24-33.5-706. THE GIFTS, GRANTS, OR DONATIONS CREDITED TO THE FUND FOR THE PURPOSES OF THIS SECTION ARE CONTINUOUSLY APPROPRIATED TO THE DIVISION FOR THE DIRECT AND INDIRECT COSTS ASSOCIATED WITH THE IMPLEMENTATION OF THIS SECTION.

SECTION 5. Appropriation. (1) For the 2015-16 state fiscal year, $2,000,000 is appropriated to the department of public safety for use by the division of fire prevention and control and the division of homeland security and emergency management. This appropriation is from the general fund. To implement this act, the divisions may use this appropriation as follows:

(a) $1,000,000 for the division of fire prevention and control to establish, support, customize, and maintain a Colorado wildland fire prediction and decision support system; and

(b) $1,000,000 for the division of homeland security and emergency management to establish, support, customize, and maintain a Colorado flood prediction and decision support system.

SECTION 6. Safety clause. The general assembly hereby finds, determines, and declares that this act is necessary for the immediate preservation of the public peace, health, and safety.