



COLORADO
**Colorado Water
Conservation Board**
Department of Natural Resources

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TO: Colorado Water Conservation Board Members

FROM: Kevin Houck, P.E. CFM
Watershed & Flood Protection Section

DATE: November 4, 2019

AGENDA ITEM: Agenda Item 5. November 20-21, 2019 Board Meeting - Potential Effects of Climate Change on Rainfall-Induced Floods

Background:

There is increasingly wide recognition that infrastructure design for a changing climate must account for the changing intensity of precipitation. To do this, engineering designs require simple methods to translate future rainfall to runoff volume in order to appropriately size pipes, culverts and other water conveyance structures. Intensity duration frequency (IDF) curves are widely used for this purpose because these curves provide a simple means of calculating the probability of exceeding a given rainfall rate for a specified amount of time.

Because IDF curves are so commonly used in engineering design, a robust method of incorporating climate change into future IDF curves could be a large step towards “mainstreaming” climate change information into water and stormwater planning. However, historical precipitation records are often short, rendering historical IDF curves uncertain. Climate change projections are also uncertain, compounding the difficulties in developing robust, climate adjusted IDF curves to inform future engineering designs under a changing climate.

In 2016, Lynker conducted a pilot study for the CWCB to develop climate-adjusted IDF curves based on observed precipitation data from meteorological stations in Colorado and an ensemble of climate change projections. A 2019 effort by Lynker and CWCB extends that effort, re-visiting the methods explored in the 2016 study in the context of a large body of recent published work on the topic. It also summarizes the available precipitation gauge data for Colorado and climate model data that have been assembled to use as potential inputs for developing new IDF curves for the state of Colorado.

CWCB staff and Lynker will present to the Board on results from the study as well as address issues such as how this information may be used moving forward.

Staff recommendation:

This is an informational item and no board action is requested at this time.

