



STAKEHOLDER  
MEETING 2018

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Tune in to the New DLC  
Color-Tuning Requirements

# Presenter



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# General DLC Development Process

DLC Collects and Aggregates Requests for Development and Revision from All Stakeholders

- Categorize by topic area
- Spec Development (new primary uses)
- Spec Revision (new performance thresholds)
- Policy Development
- Policy Revision

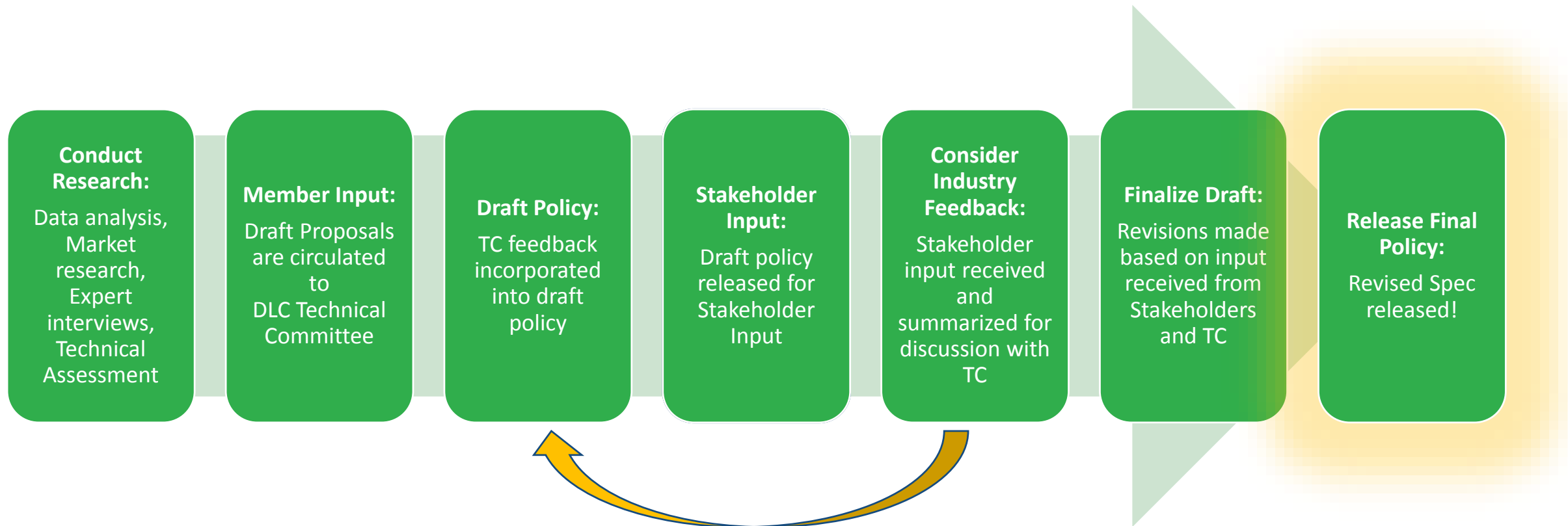
Requests Are Prioritized

- Active review with DLC Membership
- Input from Industry Stakeholders
- DLC capacity
- Alignment with DLC mission

Prioritized Tasks Are Undertaken for Research and Development

- Topic position, objectives, key considerations, and status published on DLC website: <https://www.designlights.org/workplan/>
- All major program changes undergo public comment period through DLC Stakeholder Input Process

# Stakeholder Input Is Critical





# Color Tunable Products

# Color Tuning: Motivation and Background

- Color tuning is increasing in prominence, driving demand for a DLC policy.
  - There is a diversity of approaches to accomplish color tuning, with potentially different impacts on performance
  - There is a lack of industry standards to address color tuning performance
  - A variety of standardized and propriety control protocols are in use
- DLC released draft policy for “selectable” color tuning in 2016
  - Unanimous industry feedback to expand to cover dynamic color tuning

# Color Tuning Policy: Scope

- Color Tunable Products: Products whose CCT can be adjusted via an input control and whose light output approximately follows the blackbody locus, providing white light at all input configurations
  - For this purpose, white light is defined as chromaticity coordinates within the twenty, 7-step quadrangles of ANSI C78.377-2017 Basic and Extended Specifications.
  - White-Tunable products must utilize a control interface or multiple interface options clearly described in the product literature that allow for at least two CCT settings.
- Full Color Tunable products are outside the scope of this policy

# Color Tuning Policy: Scope

Two types of products are eligible as Color Tunable:

1. **White-Tunable products**, which have a control signal specifically for adjusting CCT, and may include a second, independent dimming control
2. **Warm Dimming products**, which have no color temperature adjustment independent of light output dimming



# White-Tunable: Eligibility

- Family Grouping Applications only
- Must meet all DLC technical requirements—except CCT—at all values of the color control signal
  - DLC Premium requirements must be met at all values of the color control settings for DLC Premium
- No upper or lower limit on CCT, as long as products are capable of producing light less than 5000K or 5700K for outdoor & high-bay

# Draft White-Tunable: LM-79 Testing Summary

1. Minimum point along CCT input control setting
2. Maximum point along CCT input control setting
3. Intermediate point along CCT input control setting
4. Least efficacious condition
5. Photometric distribution for each optical variation
6. Minimum light output condition
7. Minimum nominal CCT
8. Maximum nominal CCT
9. Minimum nominal CRI
10. Highest power consumption condition
11. Worst case power quality condition (PH and THDi)

A CT product family may require as few as these 3 LM-79 tests

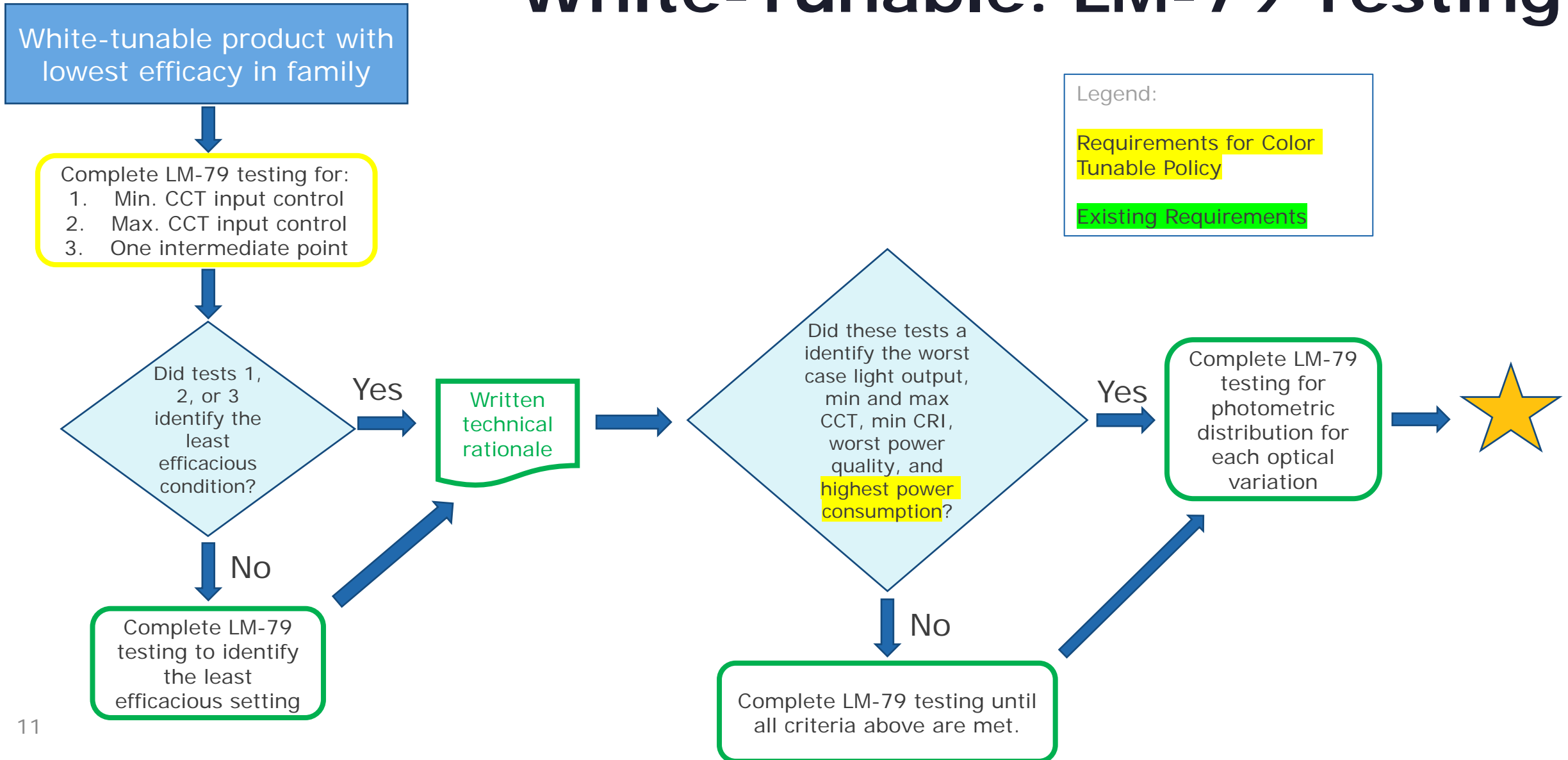
Legend:

New Tests Required for  
Color Tunable Products

Existing Test Required  
under Family Grouping  
Policy

*In-Situ Temperature Measurement Tests (ISTMTs) and LM-80 testing must be provided, as well.*

## White-Tunable: LM-79 Testing



## White-Tunable: Testing

As part of the application submittal, manufacturers must report the power consumption for each ANSI C78.377-2015 CCT quadrangle from the minimum CCT to the maximum CCT, for one reported CCT that falls between the quadrangle upper and lower limits. **In-house tested and scaled performance data is acceptable.** The data should be provided in a table with this format:

ANSI CCT Quadrangle (omit any outside product range) / Worst- Case Value	Actual CCT (K)	Power Consumption (W)	Light Output (lm)	Input Control Signal Applied
2200K				
2500K				
2700K				
3000K				
3500K				
4000K				
4500K				
5000K				
5700K				
6500K				
Lowest Efficacy				
Maximum Power				

# Warm Dimming: Eligibility

- Must meet all DLC technical requirements at the maximum output for the product.
- *Do not need to meet DLC technical requirements at other, low-output control settings*
  - DLC Premium requirements must be met at the maximum input setting for DLC Premium

# Warm Dimming: Testing

LM-79 reports shall be provided at the maximum setting of the dimming input control.

- If the LM-79 results fail to meet the Technical Requirements, the product will not qualify.

The Family Grouping Testing Requirements apply to Warm Dimming products in the same manner as with non-Color Tuning products.

# Color Tuning Policy: Listing

Products will be listed on the QPL with either “White-Tunable” or “Warm Dimming” values under a new “Color Tunability” field.

- White-Tunable products will be listed on the QPL at the least efficacious setting. The maximum energy consumption in Watts will be reported in a new field.
  - White-Tunable products will be listed with two new fields displaying the minimum and maximum CCT values.
- Warm Dimming products will be listed on the QPL at the full output setting.
  - Warm Dimming products will be listed with only the CCT value corresponding to the full output setting.



# THANK YOU!

Questions?

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