



## Adaptive Standards

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## What are Adaptive Standards?

Reducing lighting levels when conditions change such as:

- Less traffic volumes
- Less pedestrian activity



Adaptive Standards

## Adaptive Standards Possibilities

- Less traffic volumes
- Less pedestrian activity
- Seasonal effects
- Tree canopies (summer vs winter)
- Changing weather conditions
- Security concerns (turn lights off?)
- Neighborhood preferences
- Ambient lighting (lighting zones)
- Save energy and winter peak demand

Adaptive Standards

## Europe and Adaptive Standards

- CIE Publication 115:2007
- Finland already has dynamic management of nighttime roadway lighting
- Sample projects are underway in Canada and the UK.

Adaptive Standards

## Using IESNA Current Standards

- RP-8-05 classifies roads by type and also by amount of pedestrians.
- It also makes recommendations for pedestrian areas near roads.
- However, it does not address when not to light at all, when headlamps are enough.

Design Issues




## Anchorage Proposed Adaptive Standards

- Roadways and Streets
- Conflict Areas (intersections)
- Pedestrian Ways

Proposed Standards




TABLE 5-1 PARAMETERS FOR THE SELECTION OF LIGHTING CLASS M FOR MOTORIZED TRAFFIC				
Parameter	Options	Weighting Factor WF	Selected WF for Primary Use	Selected WF for Low Activity Use
<b>DESIGN PARAMETERS</b>				
Speed*	High $\geq 35 \text{ mph} (\geq 60 \text{ km/hr})$ *	1		
	Moderate $< 35 \text{ mph} (< 60 \text{ km/hr})$	0		
Separation of carriageways	No	1		
	Yes	0		
Intersection density**	High $\geq 2 \text{ per mile} (\geq 3 \text{ per km})$	1		
	Moderate $< 2 \text{ per mile} (< 3 \text{ per km})$	0		
Poor (Define)	0.5			
Good (Define)	0			
Very good (Define)	-0.5			
<b>CONDITIONAL PARAMETERS</b>				
Traffic volume**	Very high ( $> 75000 \text{ vehicles/day}$ )	1		
	High (40000 – 75000 vehicles/day)	0.5		
	Moderate (15000 – 40000 vehicles/day)	0		
	Low (4000 – 15000 vehicles/day)	-0.5		
	Very low ( $< 4000 \text{ vehicles/day}$ )	-1		
Traffic composition	Mixed with high percentage of non-motorized (Define)	1		
	Mixed	0.5		
	Motorized only	0		
Parked vehicles	Present	1		
	Not present	0		
Ambient luminance	High (Lighting Zone 3)	0.5		
	Moderate (Lighting Zone 2)	0		
	Low (Lighting Zone 1)	-0.5		
	Very low (Lighting Zone 0)	-1		
Snow luminance	Snow			
	No snow			
	Sum of Weighting Factors			

## Controls, controls and more controls

- Taking DALI outside
- “Tuning” installations for greater flexibility
- 2-way communication
- Demand response



Future in Standards

## Huge Opportunities

- Visibility based standards (safer installations)
- Effective lighting designs (layers of light and controls)
- Low energy and environmental impact



Opportunities