Outdoor Lighting – Emphasis on Data

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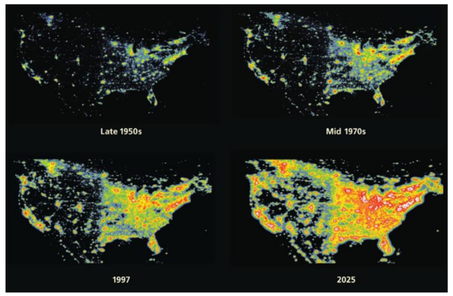
Concerns Common in Public Media

Harvard Health Letter
"Blue Light has a dark side"

CNN Health
"LED lights damage eyes and disturb sleep, European health authority warns"

LEDs Magazine
"Dark-Sky says boo to blue light"

Universe Today
"LEDS: Light Pollution Solution or Night Sky Nemesis?"



Popularly cited impacts often rely on assumptions inconsistent with field experience…

Maps created by P. Cinzano, F. Falchi, and C.D. Elvidge.

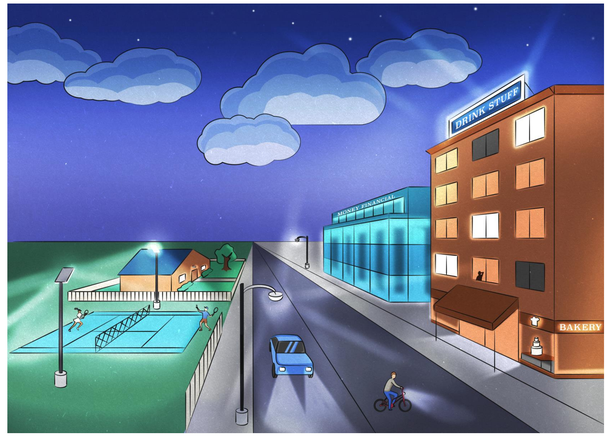
E.g., these projections assumed fixed light output and distribution

	Output and Lumens per Watt at Respective CCT											
Product *	2700K		3000K		4000K		5000K		Amber		%Δ LPW to Amber	
	Lumens	LPW	Lumens	LPW	Lumens	LPW	Lumens	LPW	Lumens	LPW	3000K	4000K
A			1680	76	2059	93.5	2024	95	382	46	-39%	-51%
B			3700	100	3750	101	3800	103	2000	61	-39%	-40%
C	395	60			445	65			295	49	NA	-25%
D	525	75	525	75	525	75	525	75	340	48.5	-35%	-35%
E									800	67		
F									960	32		
G									500	33		

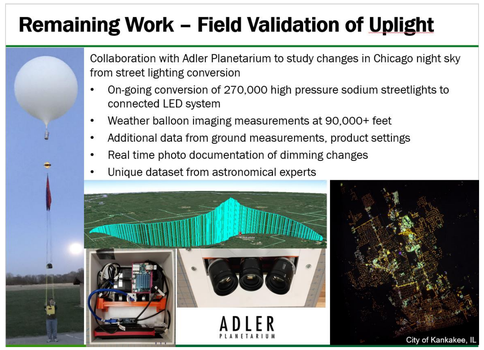
* Each row represents a single commercial product and its reported characteristics at different CCTs.

…whereas popularly cited remedies can have real energy impacts!

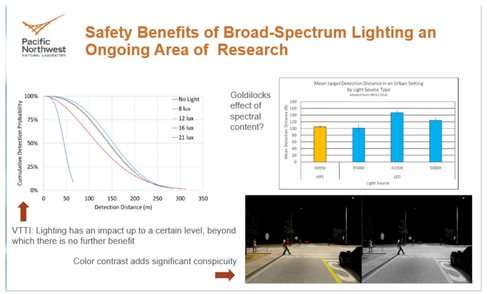
Proper Design and Implementation: A Better Way!



Objective data will end theoretical speculation (we hope)

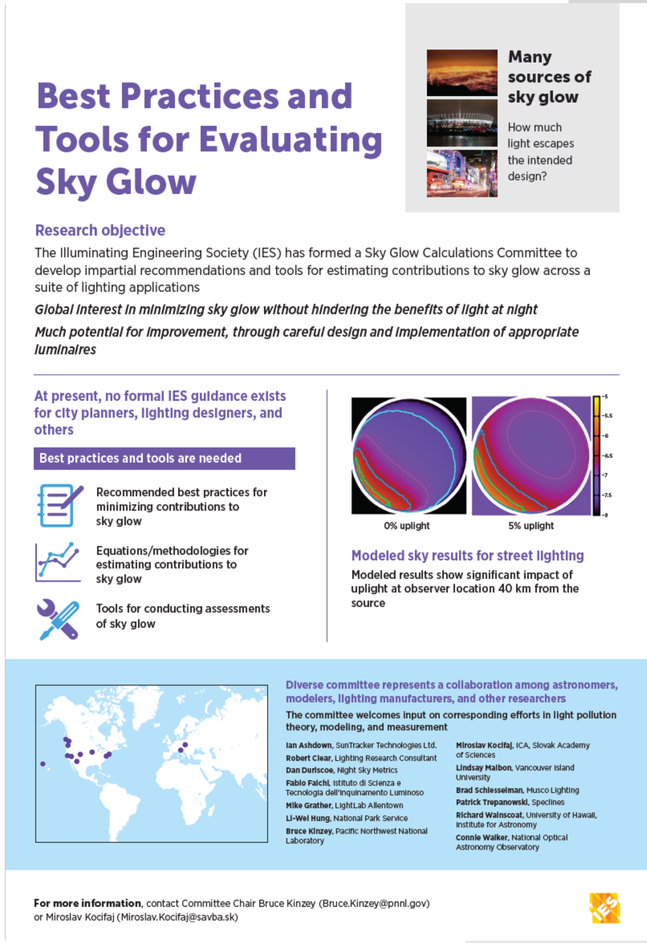


Light in Chicago night sky expected to decrease as a result of LED street light conversion



Blue light has benefits, too.

Collaboration among Astronomical, Modeling, Environmental and Lighting Communities Needed for Consensus



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