MEMORANDUM

STATE OF ALASKA

Department of Transportation & Public Facilities
Central Region Design and Engineering Services

TO: Distribution

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FILE NO:

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FROM: John Linnell, P.E. JPL
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SUBJECT: Highway Lighting & Electrical Billing Guidance – Central Region
2020 Revisions

Safety of roadway users is a top priority of the Department. While lighting is a key tool to improve nighttime safety, we prioritize lighting resources to areas of higher conflict. We also consider available maintenance capability. Highway lighting and other systems are expensive to install and maintain. As such, Central Region will minimize new installations and reduce operating costs on existing systems. Attached are two lighting guidance tables for Design:

1) Lighting Selection – when DOTPF considers lighting with 3R and 4R projects, and
2) Load Center Billing – how it is allocated between agencies.

Contact DOT/PF District electricians at least once early in the design of each lighting system. Plan a site visit with M&O before finalizing electrical facilities design.

REMOVAL: The Department may also consider locations for lighting removal or for reduced lighting hours (curfews). These choices must be approved by the Regional Director through the Preconstruction Engineer, with input from the M&O Chief. These changes may need to be incorporated into project designs.

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CENTRAL REGION DOT/PF 5/15/2020

LIGHTING SELECTION GUIDANCE for State Roads

	Type of Lighting	For 3R or 4R work?	Description	Exceptions - case by case considerations
1	Interchanges	Yes	Consider partial lighting minimum.	
2	Loop ramps at interchanges	Yes	Use continuous lighting along the loop ramp when partial lighting is provided	
3	Traffic Signals	Yes	Consider central intersection area per IES illuminance criteria or two times lighting levels used on mainline approaches - (typ. 4 poles with 1-2 poles lead-in to transition minimum light levels to intersection levels) Lighting on signal pole tops goes with signal power and circuits with approach or transition lighting, if designed.	Lighting the full length of left turn bays is not required. Maintain existing lighting circuits powered with signal load centers for state roadways within the MOA unless otherwise agreed to by TORA.
4	Roundabouts	Yes	Full lighting with approach transitional lighting at 1/2 intersection levels.	
5	Underpasses for motorists	Yes	Illuminate when continuous lighting is present or selected to either side	
6	Marked ped/bike crosswalks	Yes	Design two fixtures for new unsignalized crossings to emphasize pedestrian silhouettes to the motorist over color recognition-per AASHTO RLDG. This is consistent with past DOTPF practice and an exception to IES-RP-8.	MOA DCM has criteria for city roads.
7	Tunnels for peds/bikes	Yes	Pedestrian tubes and tunnels that do not have wide open space ratios designed for natural lighting	
8	High crash intersections/segments	Yes	Follow the scope of HSIP nominated intersections/segments.	Consider locations with 2:1 night:day crash ratio, or 2X statewide nighttime crash average for intersection type.
9	Rail-highway crossings	Yes	Use lighting per FRA Highway/RR Xing Handbook for Xings with nighttime train use, blockages at night, or nighttime crash history, or with restricted sight distance, or for a humped road profile affecting headlight targeting.	
10	Continuous lighting	No	Not typically provided without benefit/cost analysis, roadway characteristics, and identified maintenance funding. Includes high ranking (top 5%ile) moose-vehicle collision areas for consideration.	Freeways, expressways require delineation if not continuously lighted (3F.03 ATM)
11	Left turn, right turn lanes	Yes	Consider intersection lighting for high volume roads (>=12,000 vpd AADT) OR high speed roads (>= 50 MPH) when there is high volume cross-street traffic (>=100 vph). Otherwise, lighting is not typically provided without benefit/cost analysis and identified maintenance funding.	As power service and budgets fit within project scope, schedule, and ongoing M&O budgets.
12	School Bus Stops, Transit Stops	No	Not typically provided by DOT/PF	
13	Utility Pole Lighting	No	Not typically provided by DOT/PF	Optional lighting is reviewed on a case by case basis by TS&U through the DOT&PF Utility Permit application review process.

Other Lighting Design Practices

14	LED Lighting		Arterials AND freeways. Design for LED lighting with 7 pin node capability. Must meet AASHTO RDLG and ANSI/IES RP-8 light levels, or better results than existing HPS in field.	Adding nodes or control systems requires further evaluation as ITS
15	Photocells		Place primary photocell on load center in open area accessible by ground truck, ~7 ft above ground level or less.	Install second photocell/timer for continuous lighting on state owned collectors and arterials on second Contactor. To be replaced by node controls in future.

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LOAD CENTER BILLING GUIDANCE (Provice 1 Load Center for each maintaining Agency)

	Type of Lighting/Electrical Systems	Description	Fixture / Circuit Maintenance	Electrical Billing (identify agency on Load Center Table in plans)	Number of Load Centers Recommended (Typically one per road owner)	Include other lighting?	Exceptions - case by case considerations
1	Unsignalized Intersections, underpasses, tunnel lighting, culverts, signs	Isolated lightiing, typically 2 to 4 galvanized steel poles	Road Owner or crossing permittee	Road Owner or crossing permittee	1 for owner or permittee	Keep DOT separate from other permittees	Don't add on locally owned sidestreet lighting without approval
2	Signal Pole Lighting	Pole-top lighitng as part of signal poles, 1-4 poles. Isolated turn lane lighting may already be connected to the signal circuits.	Primary road owner. DOT if in DOT ROW. Within MOA, most signal pole lighting and isolated turn bay lighting is historically maintained by MOA by TORA.	Primary road owner. DOT if in DOT ROW. Within MOA, all signal pole lighting and historically connected lead in "legacy" lighting is maintained by MOA by TORA.	1-for Signal Maintainer	Yes if new isolated lighting is part of a State DOT isolated auxiliary lane for intersection. Retain existing "legacy" lighting circuits attached to signals within MOA.	Don't add on locally owned sidestreet lighting without approval. Billing for this lighting can be reassigned by TORA to local government, or by permit to access for landowner being served, 17 AAC 10.020. (Verify each new signal with Traffic & Safety)
3	Continuous Lighting	Continuous vehicular lighting using steel galvanized poles (in between signals and between intersections with isolated turn lane lighting)	Road owner	Road owner	1 per road or per lighting owner of each intersecting road. Only 1 load center for signals and lighting when both are locally owned as within MOA.	Yes can combine local lighting for local government transit, signal owners. Separate signals and turn bay lighting from continuous lighting on State DOT roads.	Use one load center for State DOT signals and lighting. Use photocell/timer controls to allow for continuous lighting curfews between signals.
4	Utility Pole Lighting	Wood poles, typically direct power, no load center, no meter, (typ. For bus stops, isolated intersections)	Utility	Local government, RSA's	Typically none, otherwise 1 for the billed party, not typically DOT.	To be determined with Utilities Section	Continuous lighting already billed to DOT as part of a planned older system, subject to M&O funding
5	Transit Stop Lighting	Low mount, pedestrian scale LED's	MOA Street Lighting M&O	Typically City/Borough Street Lighting, transit lighting, or signal lighting	1-Meter transit separately on State roads. Combine transit with other local government lighting loads.	Normally combined with local government load centers	Only combine with State DOT Load Center with Agreement/TORA
6	Electrical work during Construction	New load centers. Maintenance of existing systems while under construction.	Contractor	Existing load center billing remains with owner. New load centers are billed to Contractor until Substantial Completion issued	1 per road/lighting owner of each intersecting road.	Per each road owner	
7	Other specialized electrical for Data: RWIS, ATR's	Separate load centers for these specialized systems.	Road owner or permittee [RWIS - HQ ISSD. ATR-Anch Office Hwy Data]	Road owner or permittee	1 for owner or permittee, to the appropriate division	Keep DOT separate from other permittees	Don't add on locally owned electrical without approval
8	Existing electrical	Existing load centers - when there is no construction change	Road owner or permittee	Road owner or permittee **(does not revert to Contractor unless load center is being replaced)**	Billing remains with road owner or permittee	Keep DOT separate from other permittees	Don't add on locally owned electrical without approval