



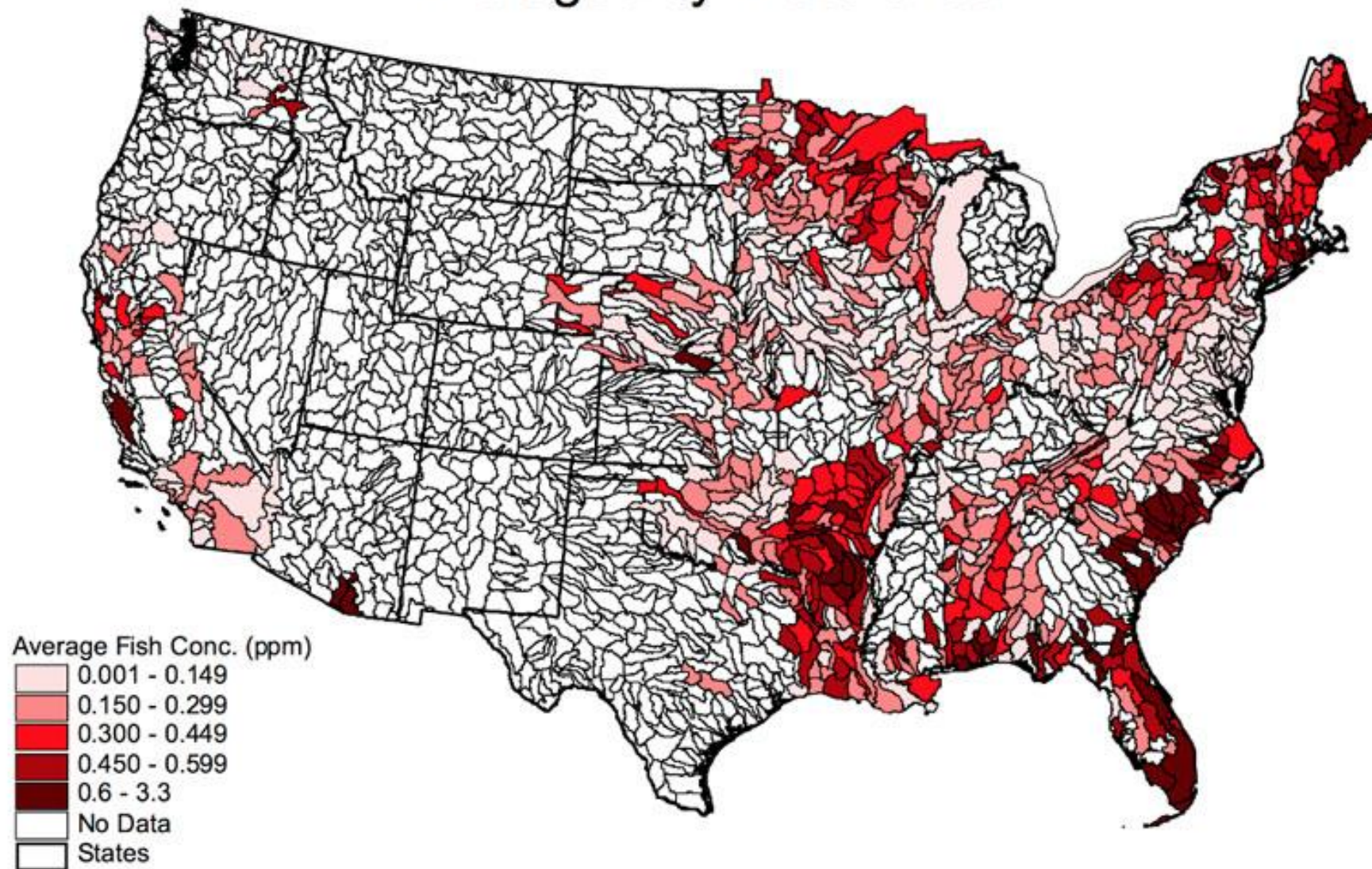
Minnesota House Climate  
& Energy Committee  
January 14, 2021

# Red Lake Solar Project





# Fish Tissue Mercury Concentrations Averaged by Watershed



Note: New Criterion for mercury in fish is 0.3 ppm. Point of departure in fish advisories often in 0.15 ppm to 0.3 ppm range. Average value based on fillet samples only. See report text for details.

Source: National Listing of Fish and Wildlife Advisories (NLFWA) Mercury Fish Tissue Database (June, 2001).

# Statement of Vision

- ▶ The Red Lake Nation will replace all the electric energy that our entire nation uses from coal, now and in the future, with solar energy.

# Strategy for solar development

- ▶ 1. Offset some energy use with rooftop solar
  - ▶ at the three casinos
  - ▶ at Red Lake school buildings
  - ▶ at other major buildings
- ▶ 2. Offset more energy use with ground-mounted solar and Storage
- ▶ 3. Offset other community energy use with ground-mounted solar on ceded lands and rooftop solar
- ▶ 4. Community development with green energy

# Goals of Phase One

- ▶ Install solar at main buildings of Red Lake
- ▶ Reduce dependence on coal
- ▶ Reduce long-term operating expenses
- ▶ Familiarize the community with solar:
  - ▶ Explore business opportunities
  - ▶ Training and job creation



# Government Center

- ▶ 1. Commissioned December 20, 2018
  - Produces 25% of building electricity
  - Installed by Solar Bear
  - Hired mostly members of Red Lake Band
- ▶ 2. Financing issues caused delays
  - First two financiers didn't deliver
  - Six banks refused to loan
  - **Crowd-funding worked!**

# Community Development

## 1. Training at many levels

- workforce development
- K through 12

## 2. Higher education

- community oriented finance
- utility operation and business

## 3. Business development





# Questions to be answered

- ▶ Can we work with local utilities?
- ▶ How much energy do buildings use?
- ▶ What can solar deliver at buildings?
- ▶ → Do a feasibility study

# Feasibility Study

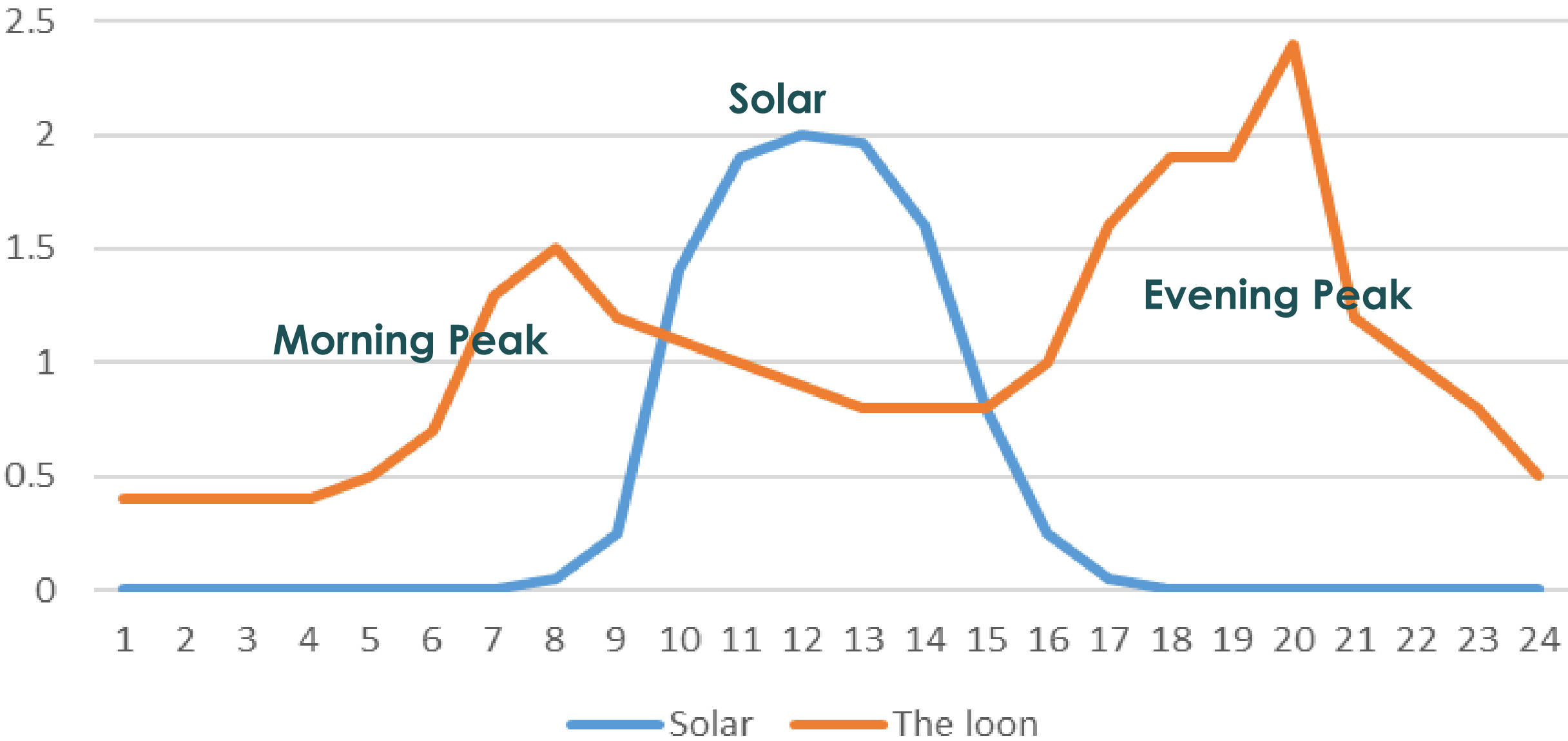
- ▶ 1. What are utility requirements?
- ▶ 2. Are building roofs suitable?
  - ▶ Review 12 months of billing history
  - ▶ Google Earth array layouts
  - ▶ Engineering review of roof structure
- ▶ 3. Financing considerations



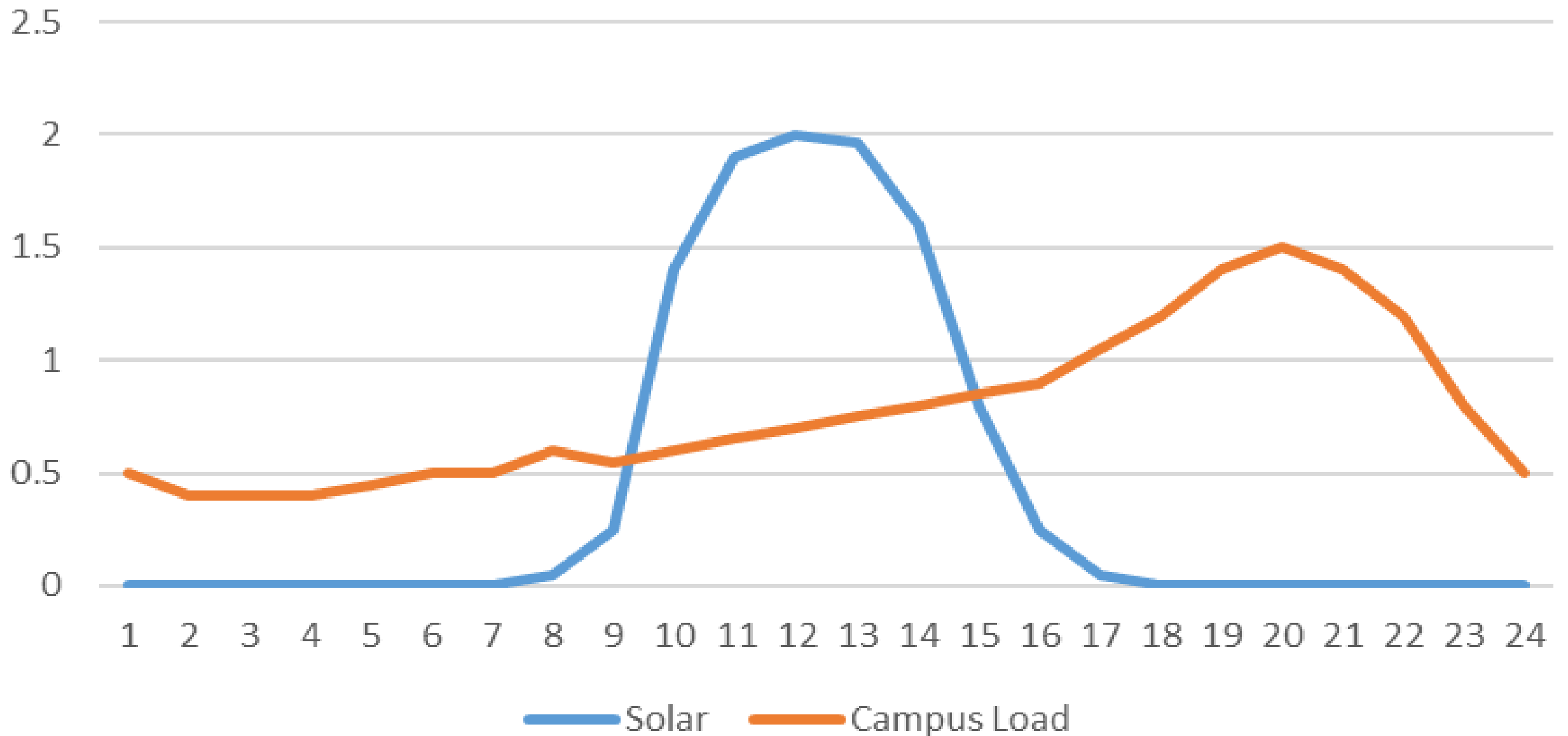
# What did We Find Out?

- ▶ 1. The electric coop cannot take solar power back into their system!
  - Antiquated net-metering tariffs
  - Too much unused capacity during daytime
- ▶ 2. All solar power must stay at buildings
  - Must be used behind the meter
  - Requires **large-scale** energy storage

# Utility Daily Load vs Solar

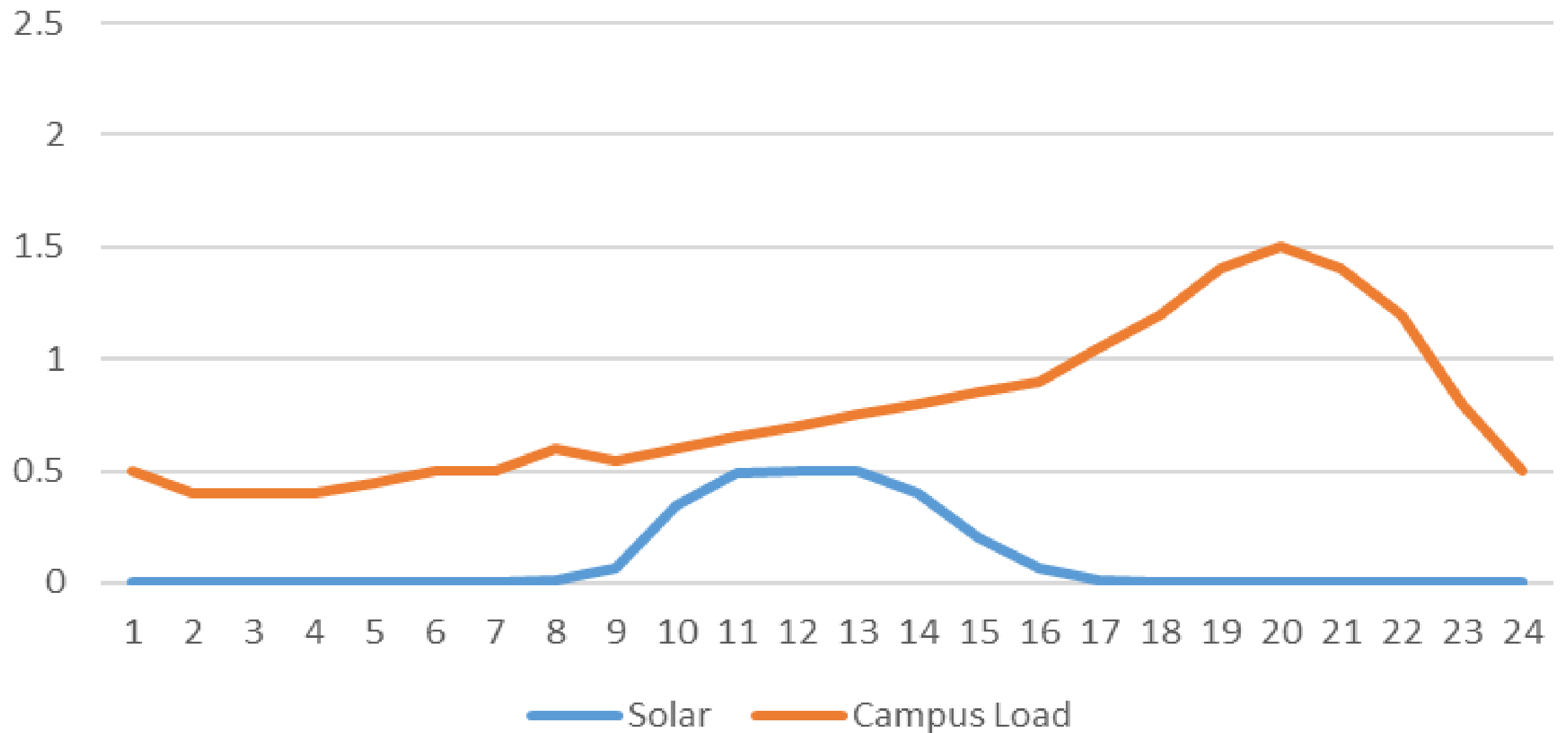


# Campus Daily Load vs High Solar

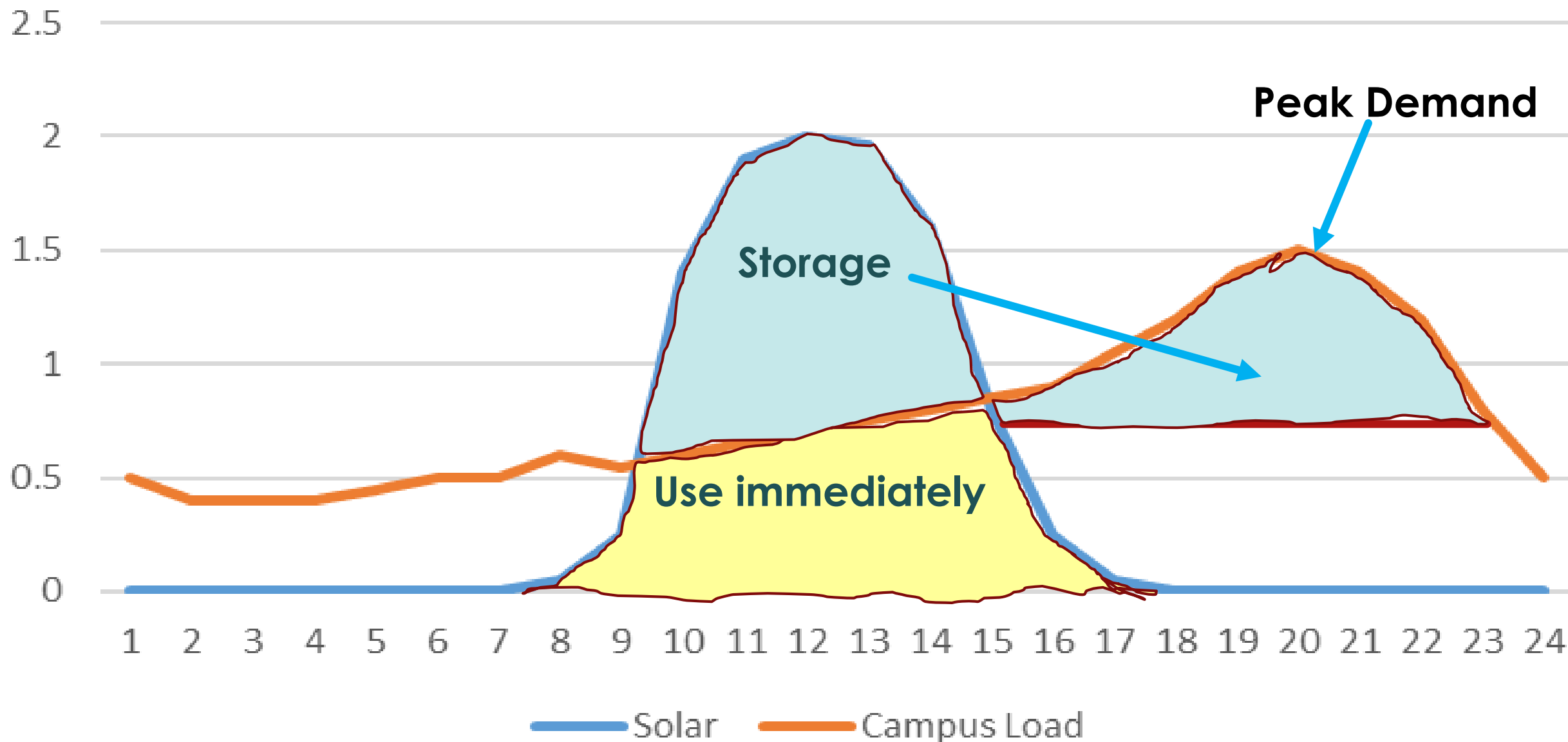




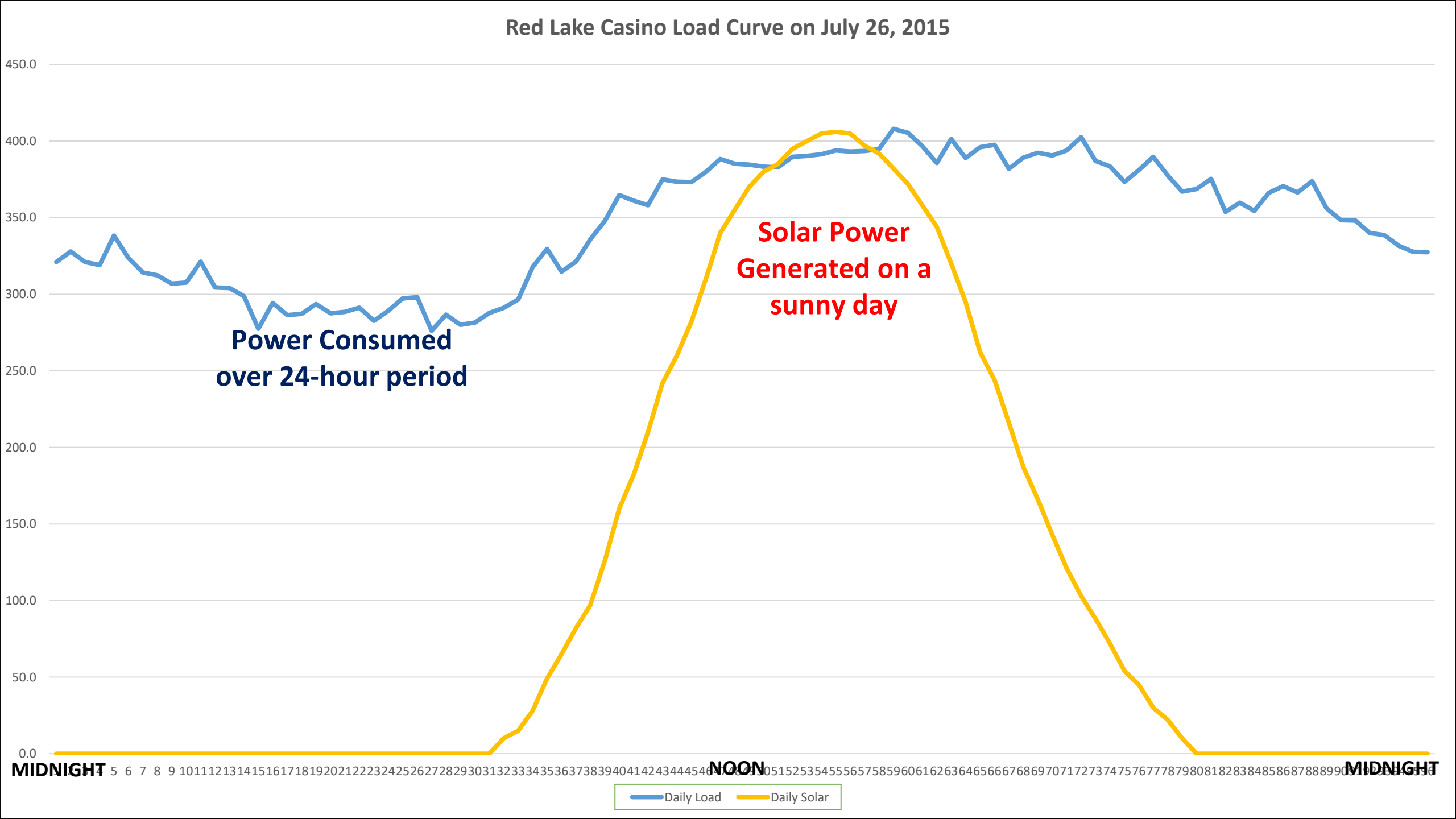
# Campus Daily Load vs Low Solar



# Campus Daily Load vs High Solar



Red Lake Casino Load Curve on July 26, 2015





			Rooftop					Groundmount
			Solar	Rooftop	Energy Usage		Shortfall	Solar
	Priority	Building Name	Max kW	yearly kwh	yearly kwh	% of load	kwh	Needed (kW)
	1	Red Lake Casino	490	588,000	2,561,700	23%	1,973,700	1,645
	1	Thief River Falls Casino	430	516,000	8,611,500	6%	8,095,500	6,746
	1	Warroad Casino	200	240,000	3,212,400	7%	2,972,400	2,477
	1	Ponema school	520	624,000	425,100	147%	-	
	2	Government Center	70	84,000	416,400	20%	332,400	277
	2	Tribal College	135	162,000	492,300	33%	330,300	275
	2	Middle and high school	1,280	1,536,000	410,400	374%	-	
	2	Elementary school	188	225,600	973,400	23%	747,800	623
	2	Early Childhood Center	345	414,000	757,600	55%	343,600	286
	2	Red Lake Justice Center	300	360,000	1,657,680	22%	1,297,680	1,081
	Totals			4,749,600	19,518,480		16,093,380	13,411
	Blue:	Less than 1 year of bills						

			Rooftop Space Max kW	Rooftop yearly kwh	Energy Usage yearly kwh	% of load	Shortfall kwh	Groundmount Solar Needed (kW)	Acres Needed
	YEAR	Building Name							
	2018	Government Center	70	84,000	416,400	20%	332,400	277	1
	2019	Ponema school	520	624,000	425,100	147%	-		0
	2019	Middle and high school	1,280	1,536,000	410,400	374%	-		0
	2019	Red Lake Casino	400	480,000	2,561,700	19%	2,081,700	1,735	8
	2019	Elementary school	188	225,600	973,400	23%	747,800	623	3
	2020	Early Childhood Center	345	414,000	757,600	55%	343,600	286	1
	2020	Tribal College	135	162,000	492,300	33%	330,300	275	1
	2020	Thief River Falls Casino	430	516,000	8,611,500	6%	8,095,500	6,746	35
	2020	Warroad Casino	200	240,000	3,212,400	7%	2,972,400	2,477	12
	2020	Red Lake Justice Center	300	360,000	1,657,680	22%	1,297,680	1,081	5
	2020	TERO Building	135	162,000					
	2020	Red Lake Water Tower	200	240,000					
	Totals		4203	5,043,600	19,518,480		16,201,380	13,501	66

# Two Stages of Phase One

- ▶ 1. Rooftop solar power systems
  - Government Center in 2018
  - Tribal College in 2018/2019
- ▶ 2. Casino & Hotel Campuses
  - Must all be used behind the meter
  - Huge opportunity for solar + storage
  - Among the largest storage in Minnesota



# Red Lake Government Center





# Red Lake Nation College

Contact IPS: [www.solar.mn](http://www.solar.mn) 651.789.5305



MARCH, 28 2016

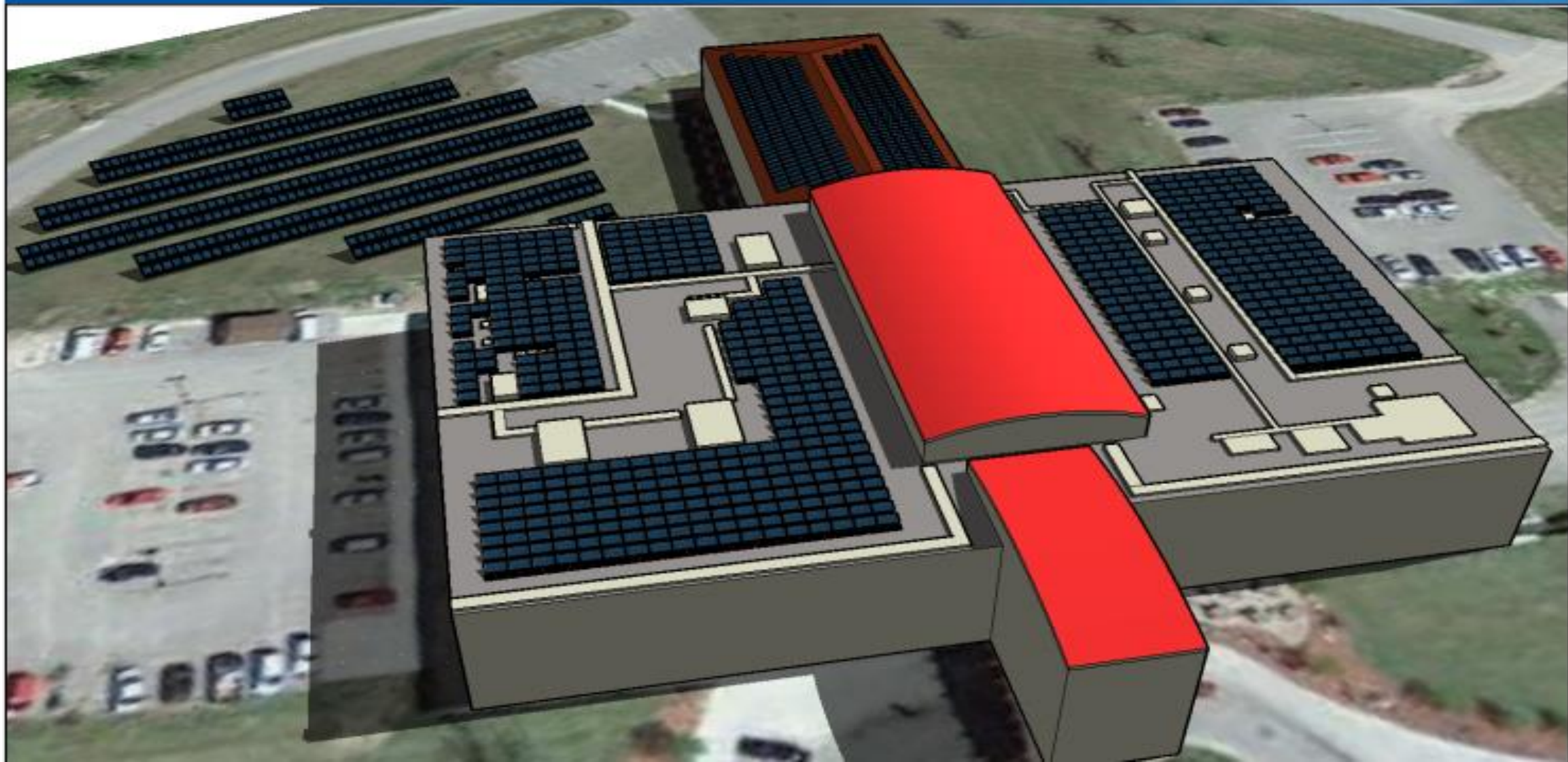
CONCEPT DRAWING

23750 MN-1, RED LAKE, MN 56671



## Red Lake Casino

Contact IPS: [www.solar.mn](http://www.solar.mn) 651.789.5305





## Thief River Falls Casino

Contact IPS: [www.solar.mn](http://www.solar.mn) 651.789.5305



Innovative Power Systems



JULY, 30 2016

CONCEPT DRAWING

20595 Center Street, Thief River Falls, MN 56701

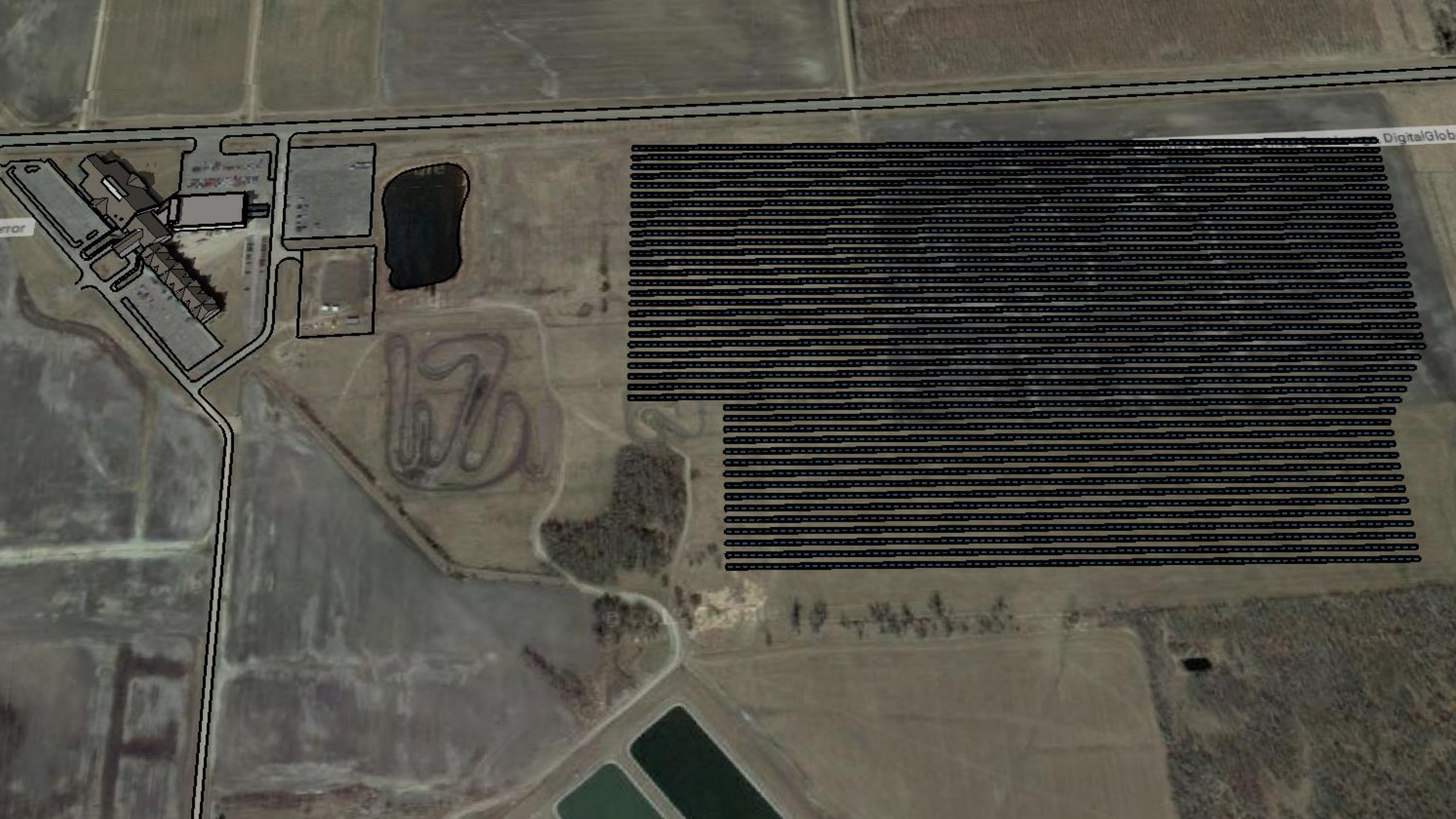


## 7 Clans Casino

Contact IPS: [www.solar.mn](http://www.solar.mn) 651.789.5305









Red Lake Nation Solar Project	Stage 1 2018	Stage 2 2019	Stage 3 2020
Red Lake Government Center	Roof Top No Storage		
Red Lake Tribal College	Roof Top Storage		
Red Lake Casino & Hotel		Roof Top Storage	Ground Mount
Warroad Casino & Hotel		Roof Top Storage	
Thief River Falls Casino & Hotel		Roof Top Storage	Ground Mount
Ponema K – 8 School		Roof Top Storage	
Red Lake Early Childhood		Roof Top Storage	
Red Lake Elementary		Roof top Storage	
Criminal Justice Complex		Roof Top Storage	Ground Mount
Red Lake Middle & High Schools		Roof Top Storage	Ground Mount
Central PV System		Solar Farm	Solar Farm

# Finance Model

- Must pass Federal tax benefits through to Red Lake
- Crowdfunding encourages local investment
  - better terms than banks give for savings accounts!
- Flips ownership to Red Lake at 7<sup>th</sup> year
- Must finance 'energy storage' also

# Contact Info

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