ENERGY STAR Commercial Food Service Webinar Series

McDonald's Energy Innovation and Net-Zero Energy Restaurant Design

Tuesday, May 18, 2021

Introduction to Monthly CFS Webinar Series

Webinars are an opportunity for Partners/Stakeholders:

- To hear news on the latest CFS events, activities, and initiatives at ENERGY STAR
- To learn about program engagement resources and tips
- To engage with ENERGY STAR and each other on industry topics and energy-savings
- To provide feedback on any information gaps and inform the development of new resources

Near-Term ENERGY STAR CFS Activities

- Spring newsletter – Published May 12, 2021
- CFS equipment calculator is now available!
- CFS utility midstream program resources – coming soon!
- Ask the Expert on Commercial Refrigeration Maintenance – coming soon!
- Active specification revisions:
  - Commercial Refrigerators and Freezers v5.0
  - Commercial Electric Cooktops v1.0
  - Commercial Ovens v3.0

CFS Webinar Series will return in the fall!

A mass mailer will be sent to confirm the date and topic! Email cfs@energystar.gov to confirm you are on the distribution list!

Stakeholder Breakdown

- Registrations for today's webinar include:
  - 32 Product Brand Owners
  - 32 EEPS/Utilities
  - 21 Other
  - 17 Implementers
  - 2 Dealers/Distributors
  - 2 Associations
  - 1 Restaurant Operator

Today’s Speakers

Steve DePalo
Director, U.S. Sustainability

Jordan Calverley
Manager, U.S. Sustainability

McDonald's Energy Innovation & Net-Zero Energy Restaurant Design

ENERGY STAR Commercial Food Service May Webinar

May 18, 2021

World’s largest restaurant company

Nearly

40K

Restaurants

2.2M

People

Working for McDonald’s or Franchisees

119

Countries

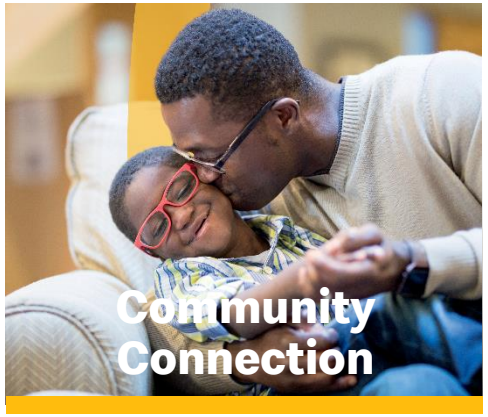
65M+

Customers

Served every day

We're here to feed and foster communities by focusing on four priority impact areas

We are sourcing delicious, quality ingredients in responsible ways.



We are connecting with our communities in times of need.

We are serving up bright futures.

We are driving climate action to help protect our planet.

While Living Our Values

We're committed to always putting our customers and people first and opening our door to everyone.

Our values guide us to do the right thing, be good neighbors and give back to our communities.

And as a family, we will continue to get better together.

Climate Change

Restaurants and Offices

The Company will partner with Franchisees to reduce greenhouse gas emissions related to McDonald's restaurants and offices by 36% by 2030 from a 2015 base year.

Supply Chain

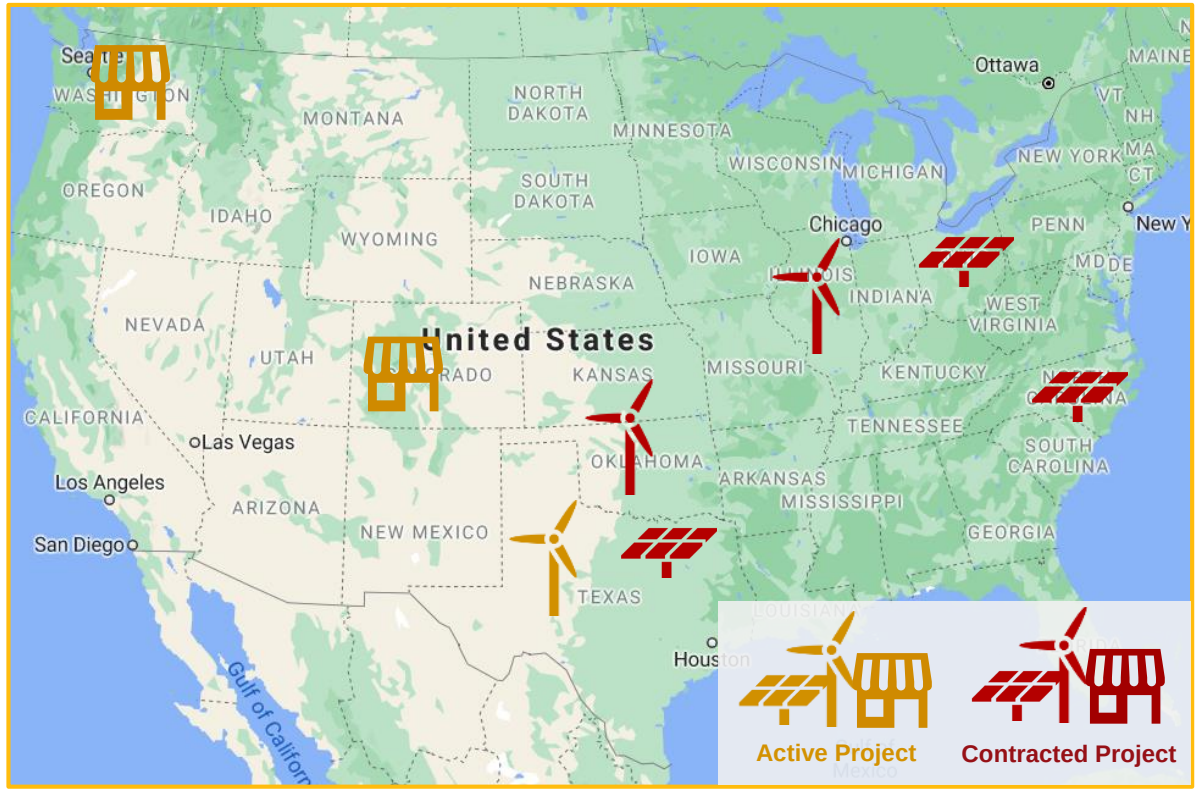
Through collaboration and partnership with our suppliers and producers, the Company also commits to a 31% reduction in emissions intensity (per metric ton of food and packaging) across our supply chain by 2030 from 2015 levels.

This combined target has been approved by the Science Based Targets initiative (SBTi).

McDonald's U.S. Renewable Energy Portfolio

Customer First Renewables

*The McDonald's team has been working to build a portfolio of **large-scale wind and solar projects** while also **engaging Franchisees on local opportunities** where available*



Projects To Date

Wind Project in TX
- ~1,300 restaurants worth* (220 MW)

Solar Project in TX
- ~650 restaurants worth* (160 MW)

Wind Project in OK
- ~1,300 restaurants worth* (220 MW)

Wind Project in IL
- ~750 restaurants worth* (127 MW)

Solar Portfolio in NC&OH
- ~1,650 restaurants worth* (423 MW)

Utility Solar Program in CO
- Local restaurants participating

Utility Solar Program in WA
- Local restaurants participating

* Based on average annual U.S. restaurant load

Source: CFR Analysis

ECO2 Energy Efficiency Program

Burton Energy Group

Background	• The Energy Cost Optimization for Operators (ECO2) program aims to help Operators improve energy efficiency in their restaurants • The program and approach have evolved over the past few years; currently, the team is **focused on electric utility-specific incentive programs** to roll out to eligible restaurants
Objectives	• Identify and implement cost efficient energy saving technologies in restaurants
Scope	• Actively pursuing programs in the Northeast; exploring opportunities for other geographies
Sustainability Benefits	• Reduced energy usage and lower GHG emissions, contributing to McDonald's climate action goals

McDonald's ENERGY STAR Partnership

- McDonald's has been an **ENERGY STAR Partner since 2001**
- Restaurant **kitchens use ENERGY STAR equipment**, including Fryers, Ovens, and Ice Machines

1998

Green Lights
Partner of the Year

2007

ENERGY STAR
Partner of the Year

2012

Green Power Partnership
Partner of the Year

McDonald's Global Flagship
Buena Vista @ Disney World Resort

Location

On Walt Disney World Resort property

Existing

1998 to 2008

2009 to 2019

Background

DUKE UNIVERSITY PROJECT: “NET ZERO ENERGY BUILDING ANALYSIS FOR MCDONALD’S USA”

Design Brief

Bring Feel Good Design to life in a restaurant by incorporating visible and impactful symbols of change such as modern architecture and technology which showcases:

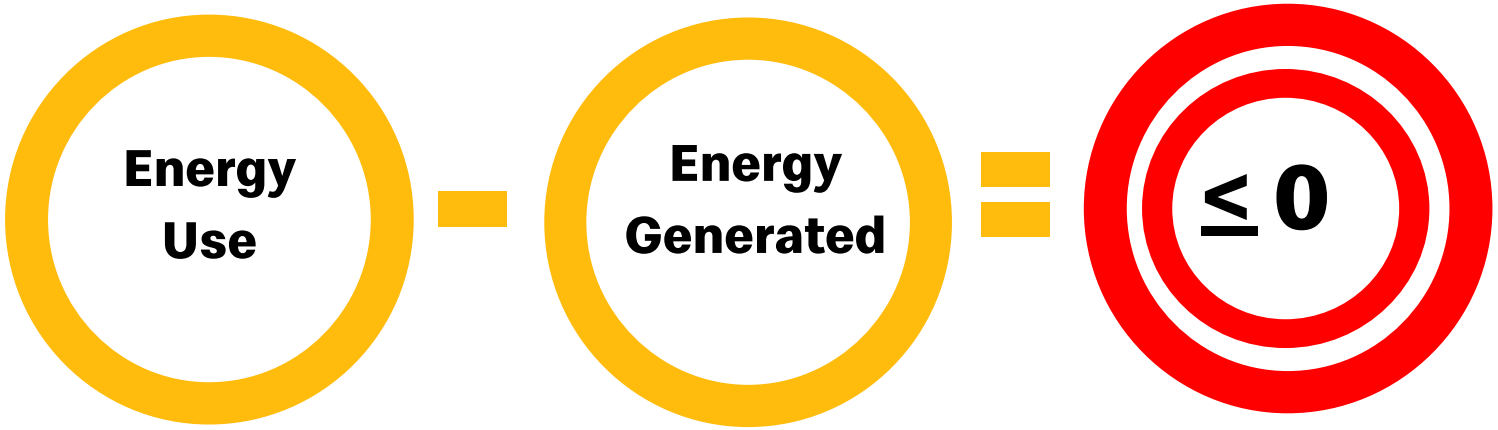
Sustainability

Family Experience

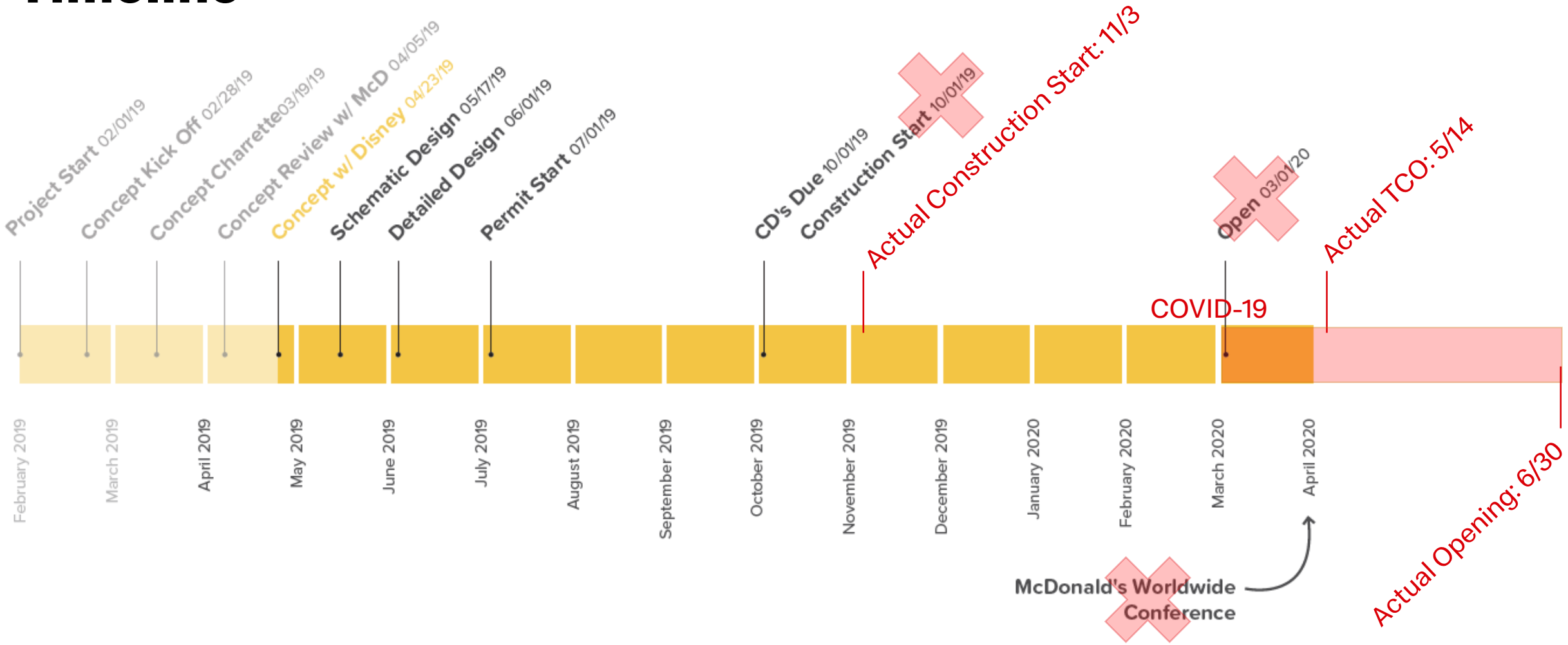
EOTF

Net Zero Energy:

100% of the building's energy needs on a net annual basis must be supplied by on-site renewable energy.



Timeline


Project Start 02/01/19
Concept Kick Off 02/28/19
Concept Charrette 03/19/19
Concept Review w/ McD 04/05/19
Concept w/ Disney 04/23/19
Schematic Design 05/17/19
Detailed Design 06/01/19
Permit Start 07/01/19
CD's Due 10/01/19
Construction Start 10/01/19
Actual Construction Start: 11/3
Open 03/01/20
Actual TCO: 5/14
COVID-19
Actual Opening: 6/30
McDonald's Worldwide Conference
February 2019
March 2019
April 2019
May 2019
June 2019
July 2019
August 2019
September 2019
October 2019
November 2019
December 2019
January 2020
February 2020
March 2020
April 2020

Energy Targets

Preserve the McDonald's experience:
Don't interfere with what people know; layer on top of it to increase perception of McDonald's

Must be based in real science and engineering:
Guard against inauthentic or unrealistic elements.

Showcase a variety of potential energy sources:
We must demonstrate the ability to integrate a myriad of energy sources.

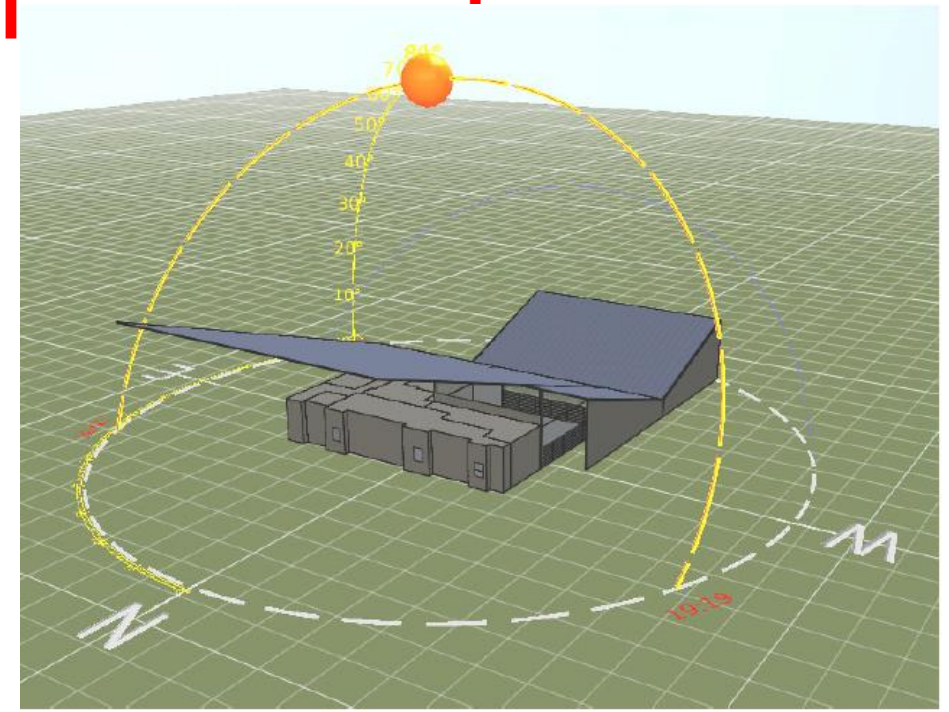
Combine education and engagement:
Not just passive learning but an immersive and dynamic experience.

Preserve the balance needed to achieve net-zero:
Remain conscious of how much energy we're using.

Existing Energy Use: 1,079,114 kWh/yr

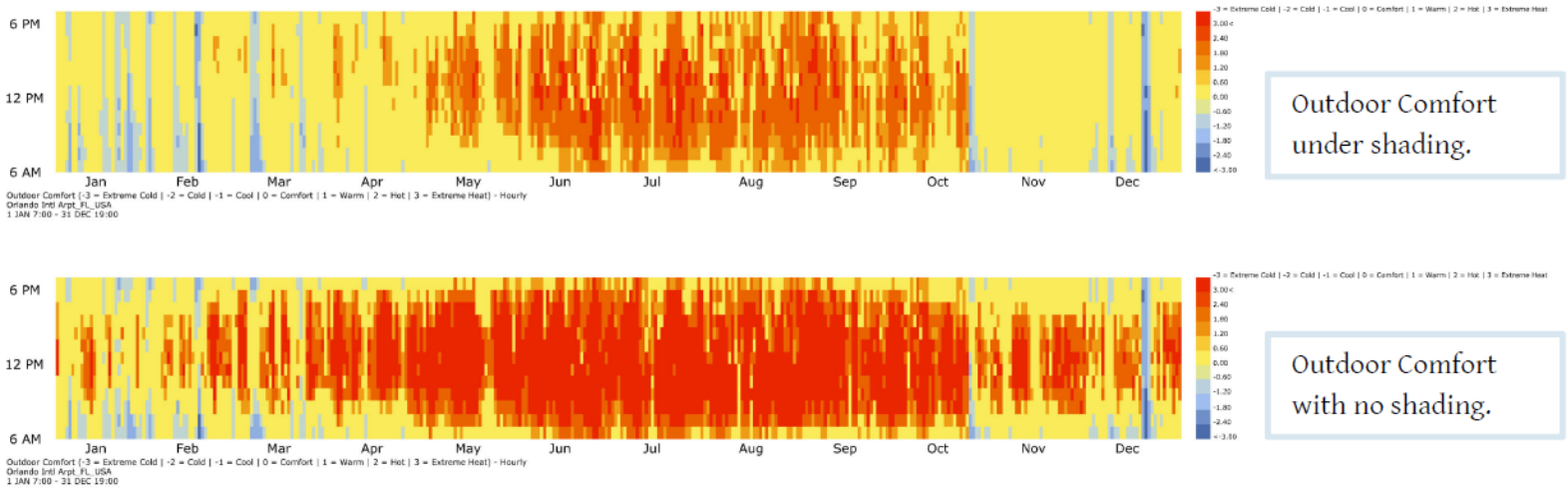
Energy Reduction: 666,454 kWh/yr (35-40%)

Renewable Energy Required: 704,791 kWh/yr (+5.5%)



Climate

Shading Strategy



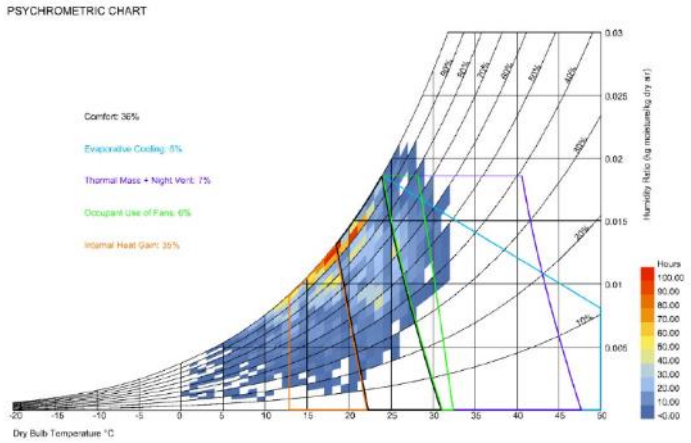


Figure 1 - Outdoor Shading comfort study

Outdoor Comfort: Each dot in this chart represents every hour of the year between 6AM and 6PM. It represents outdoor comfort. The yellow areas indicate comfort; the orange and reds represent sensation of warmth or too warm. Blues are times when it is too cold outside. The lower chart represents the comfort sensation for a person standing on the sun, and the chart on top for a person standing under a ~15 high shade (a canopy, not a tree). The difference is that under the sun, during daytime in Orlando, you will be comfortable only 35% of the time (yellow areas), by adding shade the comfortable time increases to 58% of the day time.

Natural Ventilation

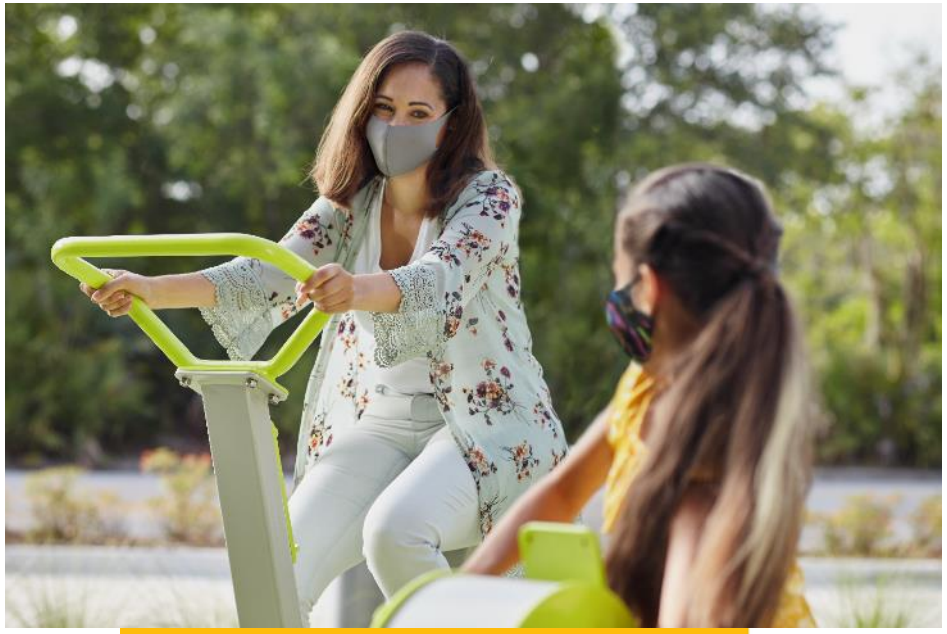
Dining Room incorporates natural ventilation and breathes on comfortable days. In other words, when temperature and humidity are just right (65% of the year), the windows automatically open to allow air to circulate through the space reducing the demand for mechanical air conditioning.

This restaurant was designed with windows that breathe!

Living Wall

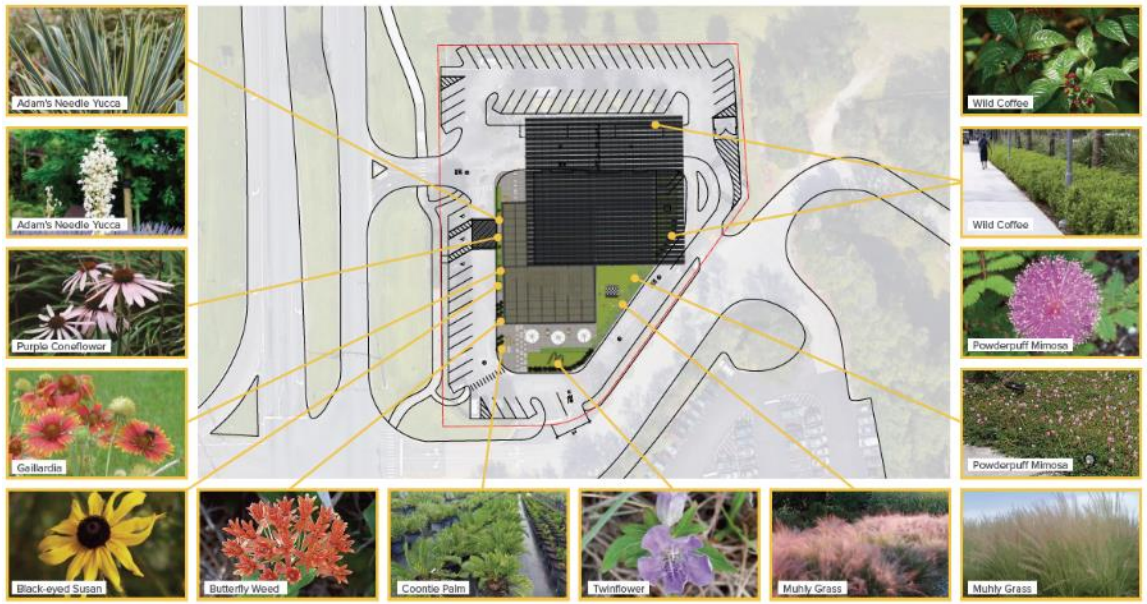
This McDonald's has over
1,700 square feet of green,
plant-covered walls.

Outdoor Bikes

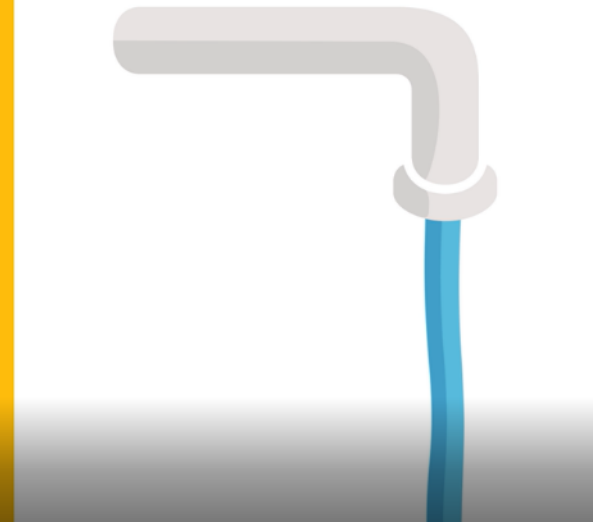


Our outdoor stationary bikes converts your power into electrical energy!

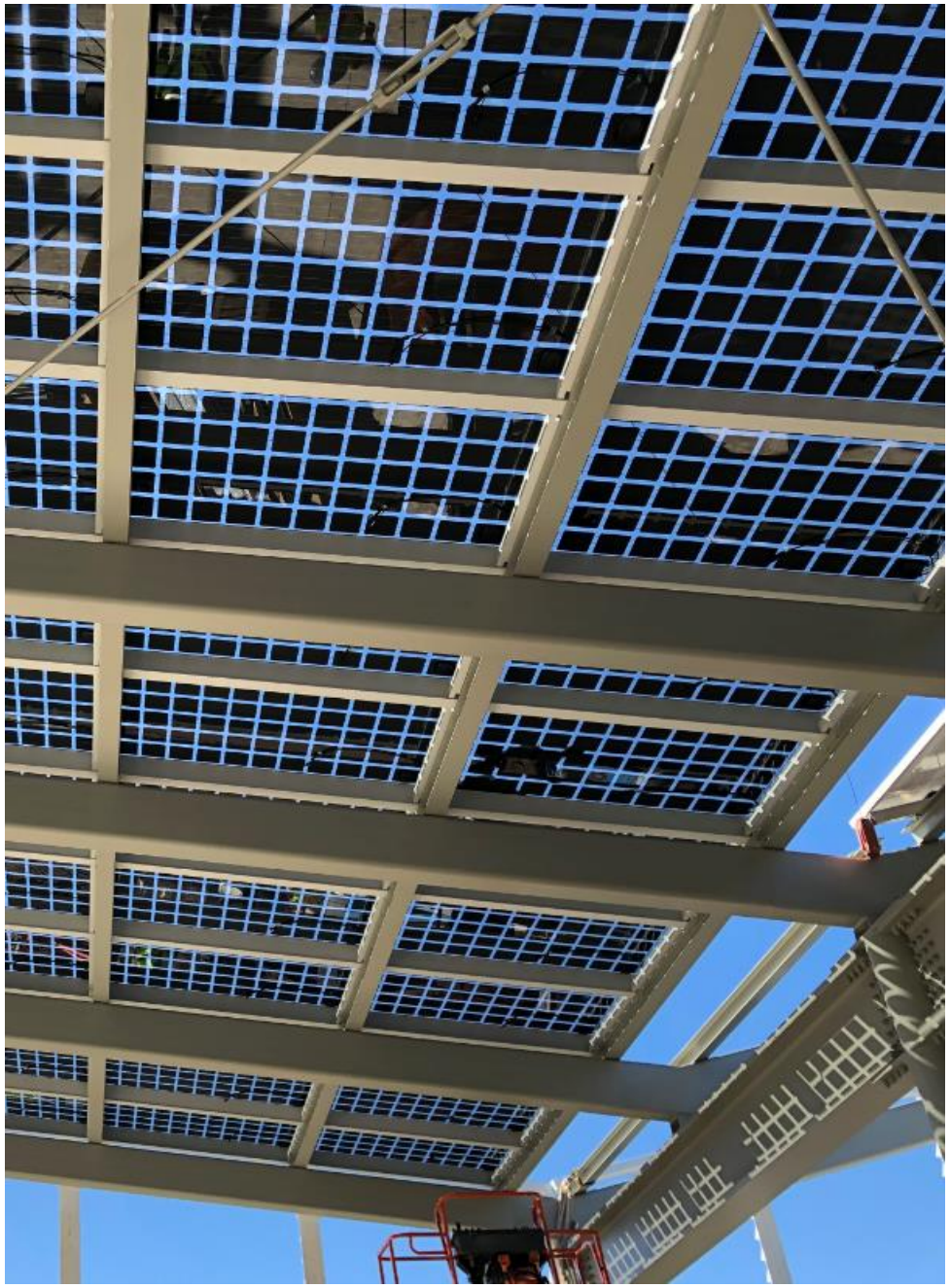
Water



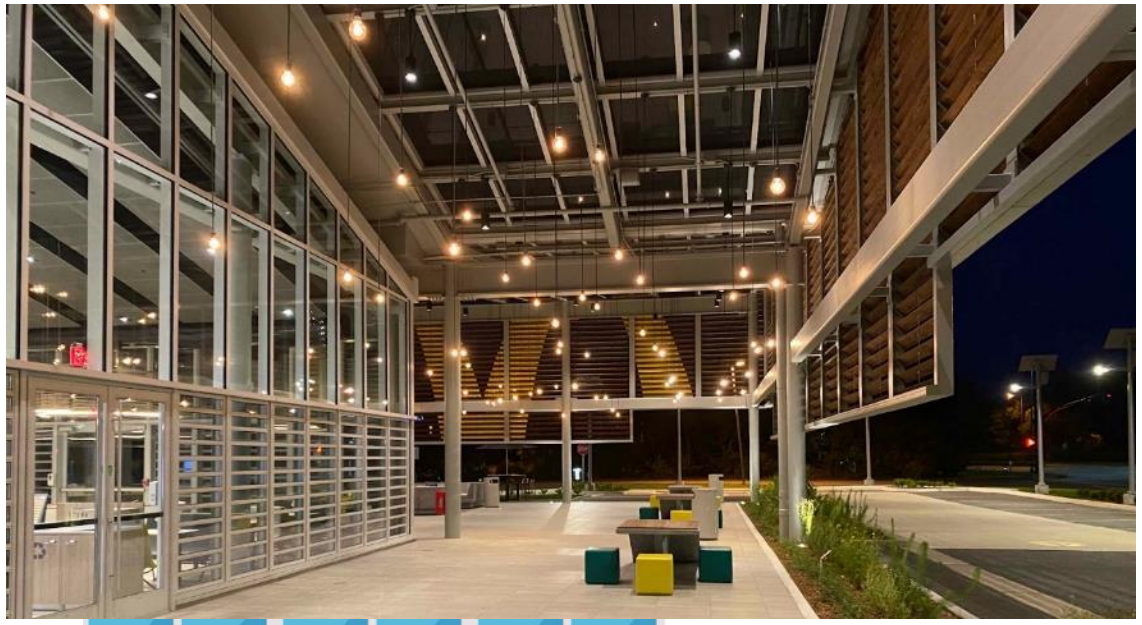
Plumbing in the restaurant uses low flow fixtures to all use less water.

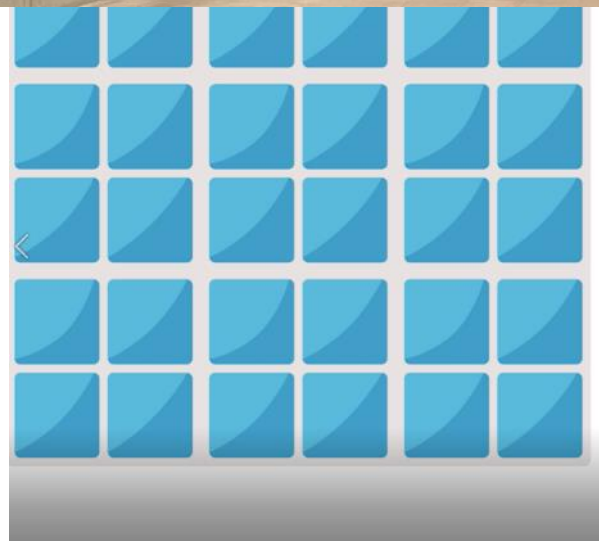


Solar Panels

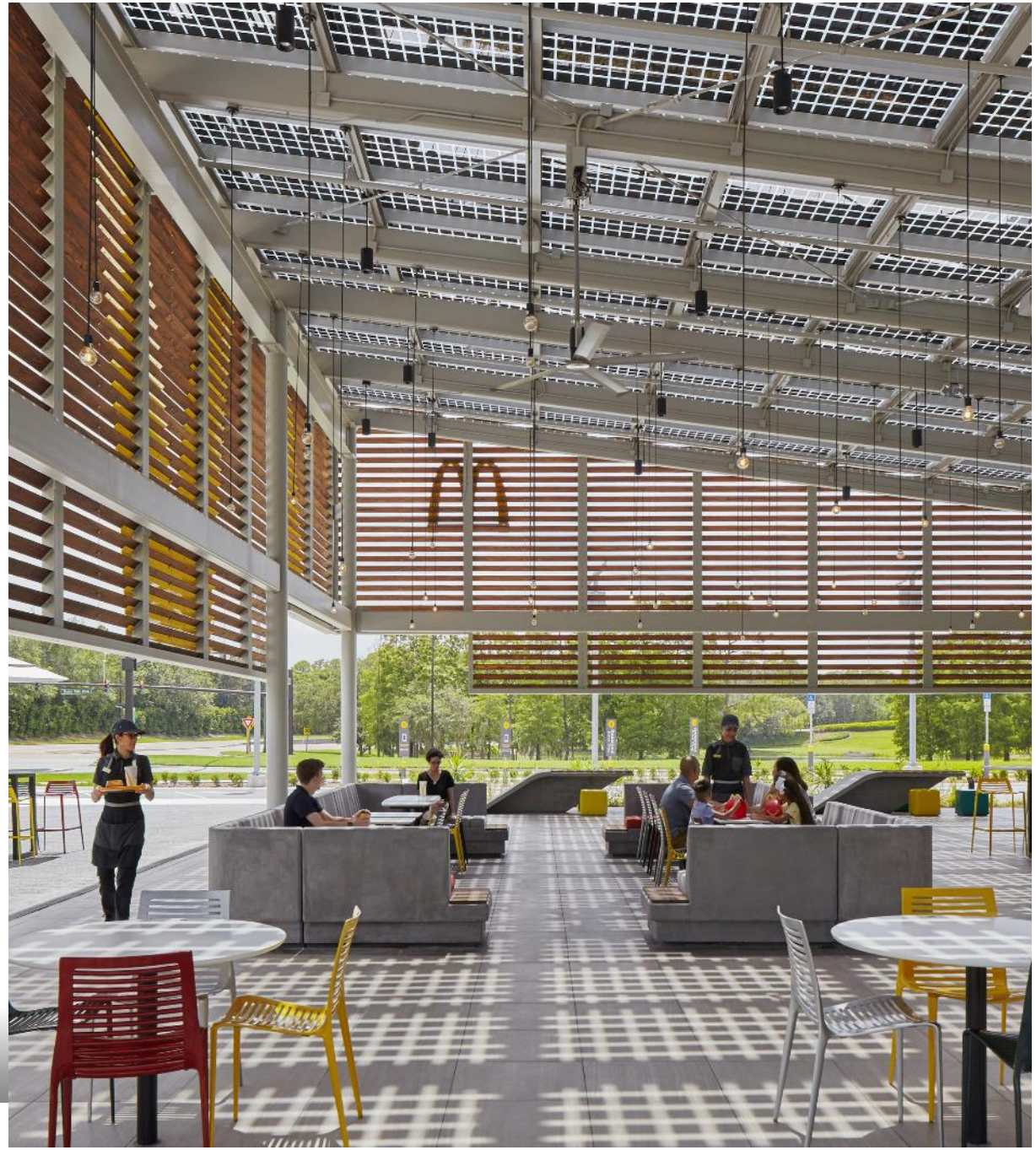


Solar Glass (BiPV)

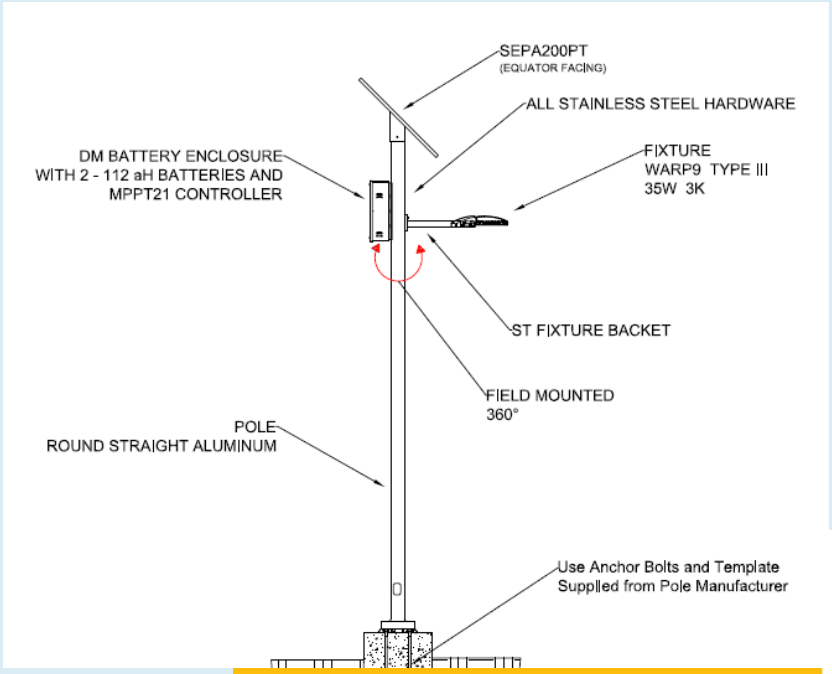




There are actually **4,800** square feet of solar glass panels.



Solar Lot Lights



Solar panels on parking lot lights

Family Experience

EOTF

By combining family hospitality with technology and family amenities, we can unlock the potential of EOTF.

Make families feel special

Make it fun for kids and parents

Make it easy for parents

Smile Wall

Special Features

Interactive sparkle table and smile wall that change colors.

Tablet games and building information screens.

Dining tables have built in technology providing customers a way to charge their phones while also allowing a quick access link to mobile ordering.

Outdoor bikes provide an active play opportunity while also encoraging the use of alternate transportation and the power human energy.

Decor incorporates custom graphics on the walls highlighting some of the unique sustainability features on this restaurant.

12 self order kiosk order points

Separate McDelivery counter pick up area and door allows easy and convenient access.

Recyling bin sorting signage making the recycling process easier to understand.

ONLY

STOP

STOP
STOP

Welcome back
EXIT

Mobile Order
Pickup

Disney World Just Opened the World's Most Mind-Blowing McDonald's

> Our new global flagship restaurant at Walt Disney World Resort is the first of its kind

McDonald's solar-powered Disney World store a lab for future

First zero-emission McDonald's restaurant unveiled at Disney, Florida

Thank you

Questions?

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