



# SAP AppHaus

## The NHL and SAP Team up to Boost Sustainability Impact

December 8, 2022

Sally Lawler Kennedy, Frank Densborn, Carolina Robertson Prego Cadaval

EXTERNAL









**“We know what's at stake. The roots of our sport are born in frozen ponds. We need cold climates. We need freshwater. And we play in essentially a giant refrigerator. If we really want to take this seriously, we really want to understand what our environmental impacts are and then how can we help mitigate or reduce where practical. And so this is all part of our sustainability journey.”**



# NHL Venue Metrics **Overview**

## Challenge

The NHL wanted to decrease its carbon footprint and improve sustainable efficiencies to mitigate the impact of global climate change to ensure future generations would be able to enjoy the game of ice hockey.

## Solution

SAP and the NHL created a new data driven platform called NHL Venue Metrics allowing the NHL to measure and make informed decisions on the environmental footprint of its clubs and their arena partners across various areas, including energy, water, waste, and recycling.

## SAP Products

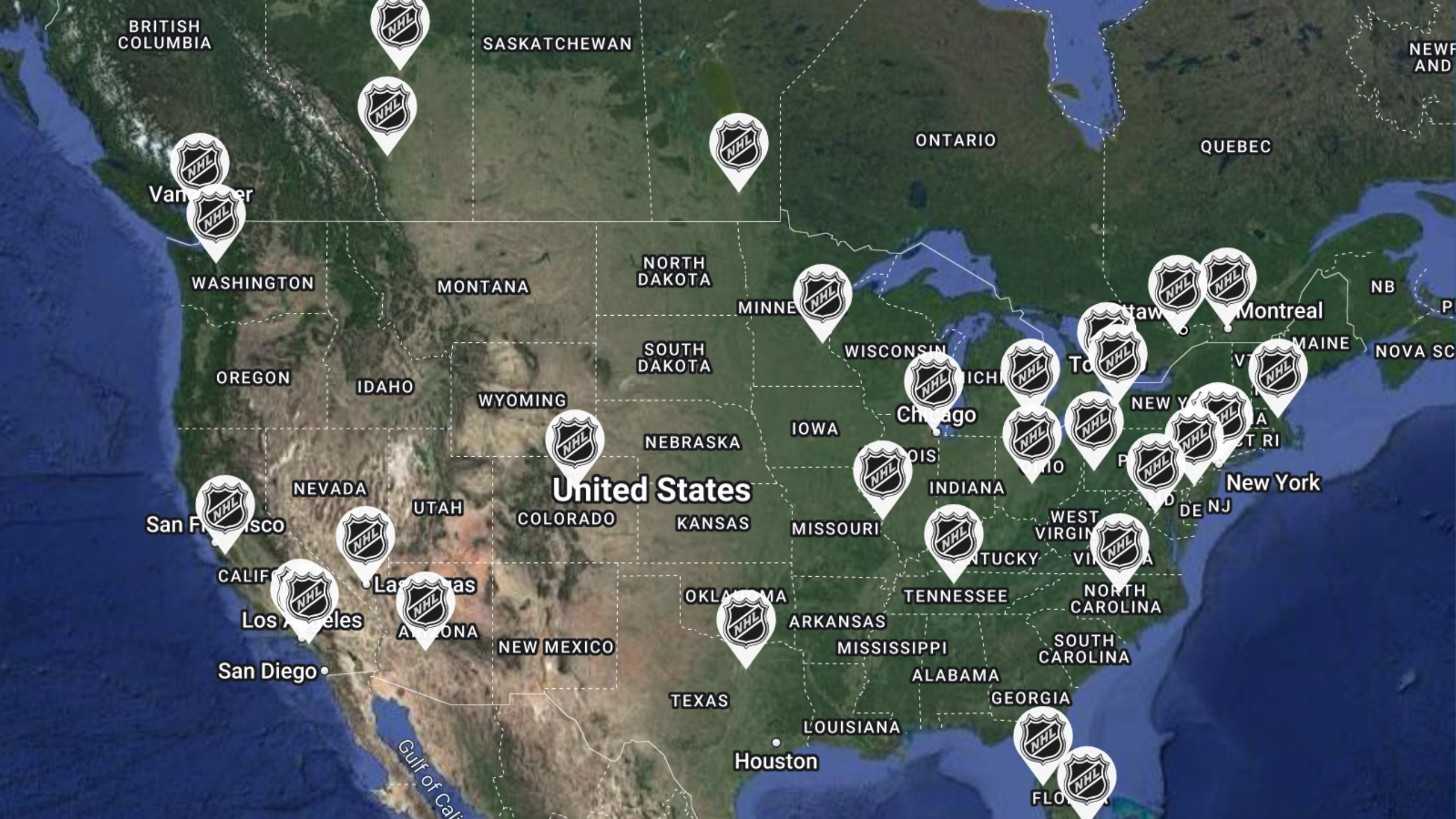
- SAP Business Technology Platform
- SAP Analytics Cloud
- SAP HANA Cloud
- SAP Build











BRITISH COLUMBIA

SASKATCHEWAN

ONTARIO

QUEBEC

Vancouver

WASHINGTON

MONTANA

NORTH DAKOTA

MINNESOTA

SOUTH DAKOTA

WISCONSIN

Toronto

Montreal

OREGON

IDAHO

WYOMING

NEBRASKA

IOWA

Chicago

TO

NEW YORK

San Francisco

NEVADA

UTAH

COLORADO

KANSAS

MISSOURI

INDIANA

WEST VIRGINIA

New York

CALIFORNIA

Las Vegas

ARIZONA

NEW MEXICO

OKLAHOMA

ARKANSAS

TENNESSEE

NORTH CAROLINA

Los Angeles

San Diego

TEXAS

LOUISIANA

Houston

ALABAMA

GEORGIA

SOUTH CAROLINA

Gulf of California

FLORIDA





Data Collection

NHL League Dashboard Overview

NHL Team Dashboard Overview

Greenhouse Gas Emission

Energy Consumption

Water Consumption

Waste Production

Normalization

Greenhouse Gas Emission

Energy Consumption

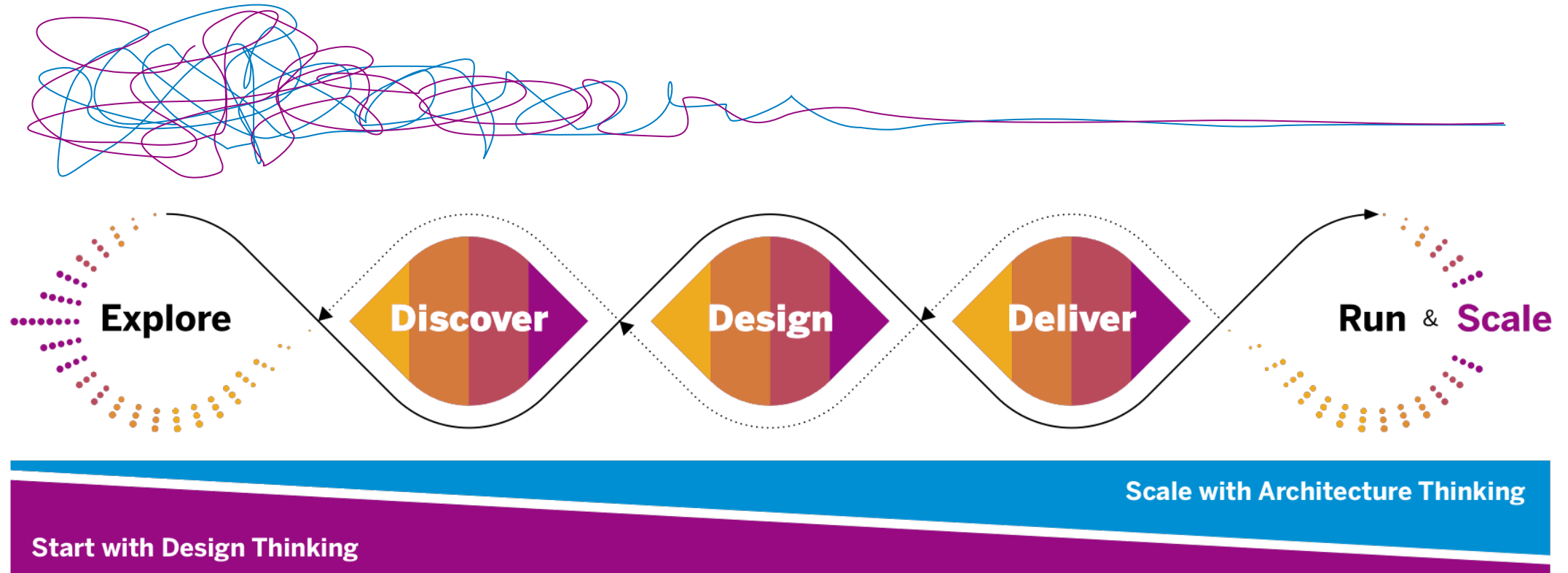
Water Consumption

Waste Production

Normalization



# SAP's Human-Centered Approach to Innovation



SAP's Human-Centered Approach to Innovation helps companies to deliver innovation in a systematic, efficient and effective way



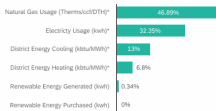
# NHL Sustainability Reporting Dashboard

## ENERGY

Open

Cost of Total Energy Usage 2021  
in Thousand US Dollars (\$)  
**1,286.91K** (+603.87)  
Compared to 2020

Total Energy Consumption 2021 and Type  
in Thousand MMBTU  
**126.24K** +62.05  
Compared to 2020



## WATER

Total Water Usage 2021  
in Gallons/cf  
**156,117.00** (+77,213.00)  
Compared to 2020

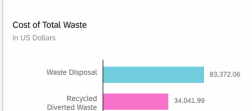
Total Water Cost  
in US Dollars  
Acquired Disposal Total



## WASTE

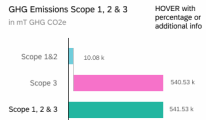
Total Waste 2021  
in Tons  
100.25

Cost of Total Waste  
in US Dollars  
Waste Disposal Recycled / Diverted Waste Solid Waste Hauled



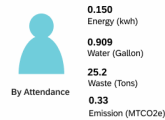
## GREENHOUSE GAS EMISSION

Total Greenhouse Gas Emission 2021  
in Thousand mt GHG CO2e  
**541.53K** (+603.87)  
Compared to 2020

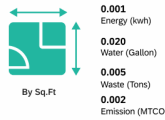


## NORMALIZATION

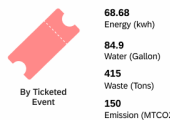
Total Attendants 2021  
in Thousand  
**839.64K**



Total Facility Size 2021  
in Million  
**148.20M**



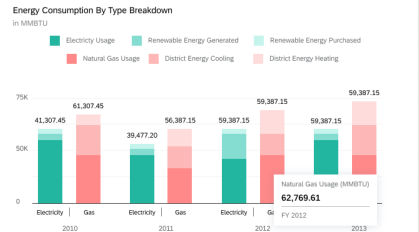
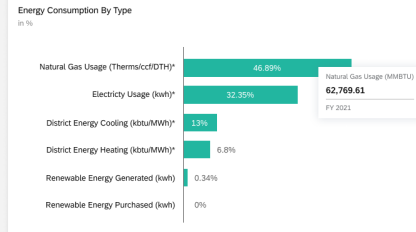
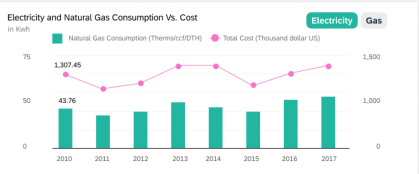
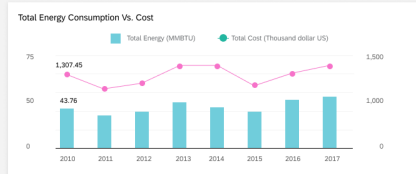
Total Ticketed Events 2021  
in Number of Events Hosted  
**1,832**



# NHL Sustainability Reporting - Energy

Year	Reporting Date	Country	Club	KPI	KPI Category
2021	(Jul.01.2021 - Jun.30.2021)	(All)	(All)	(All)	(All)

Metric	Value
Electricity Usage (in Million kwh)	12.69M
Cost of Electricity Usage (in Thousand US Dollars)	1,065.19K
Natural Gas Usage (Therms) (in Thousand)	611.79K
Cost of Natural Gas Usage (in Thousand US Dollars)	242.26K
Total Energy Usage (in Thousand MMBTU)	43.76K
Cost of Total Energy Usage (in Thousand US Dollars)	1307.45K

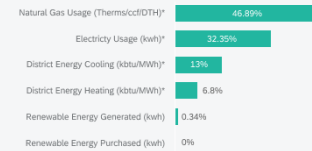


# Team Sustainability Reporting Dashboard

## ENERGY

Cost of Total Energy Usage 2021  
in Thousand US Dollars (\$)  
**1,286.91K** (+603.87)  
Compared to 2020

Total Energy Consumption 2021 and Type  
in Thousand MMBTU  
**126.24K** +62.05  
Compared to 2020



## WATER

Total Water Usage 2021  
in Gallon/cf  
**312,544.00** (+77,213.00)  
Compared to 2020

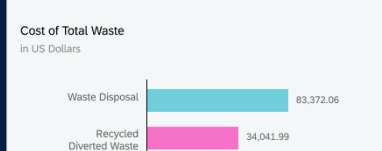
Total Water Cost  
in US Dollars  
Acquired Disposal Total



## WASTE

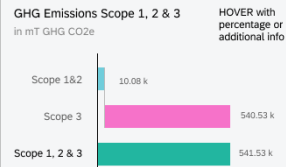
Total Waste Usage 2021  
in Tons  
100.25

Cost of Total Waste  
in US Dollars  
Waste Disposal Recycled / Diverted Waste Solid Waste Hauled



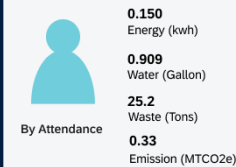
## GREENHOUSE GAS EMISSION

Total Greenhouse Gas Emission 2021  
in Thousand mt GHG CO2e  
**709,676.57** (+603.87)  
Compared to 2020

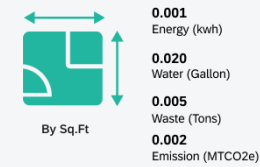


## NORMALIZATION

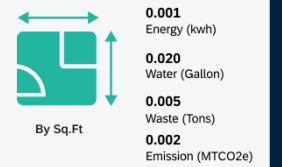
Team Attendants 2021  
in Thousand  
**839.64K**



Team Facility Size 2021  
in Million  
**148.20M**



Team Facility Size 2021  
in Million  
**148.20M**







### ENERGY CONSUMPTION

Total Energy Consumption by Team Fiscal Year in Thousand MMBTU



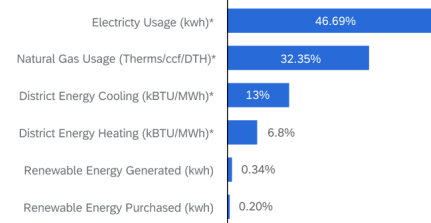
Cost of Total Energy Usage in US Dollars (\$)

**\$1.27 M** (+60 K)

Total Energy Consumption in MMBTU

**126.24 K** (-18.45 K)

Total Energy Consumption by Type

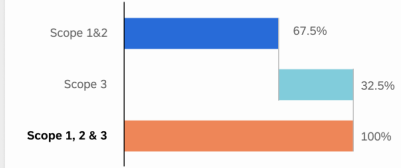


### GREENHOUSE GAS EMISSION

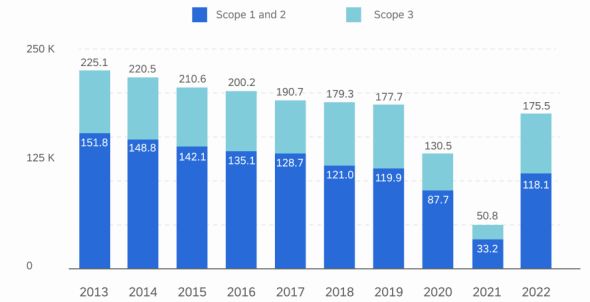
Total Greenhouse Gas Emission in MTCO2e

**175.53 K**

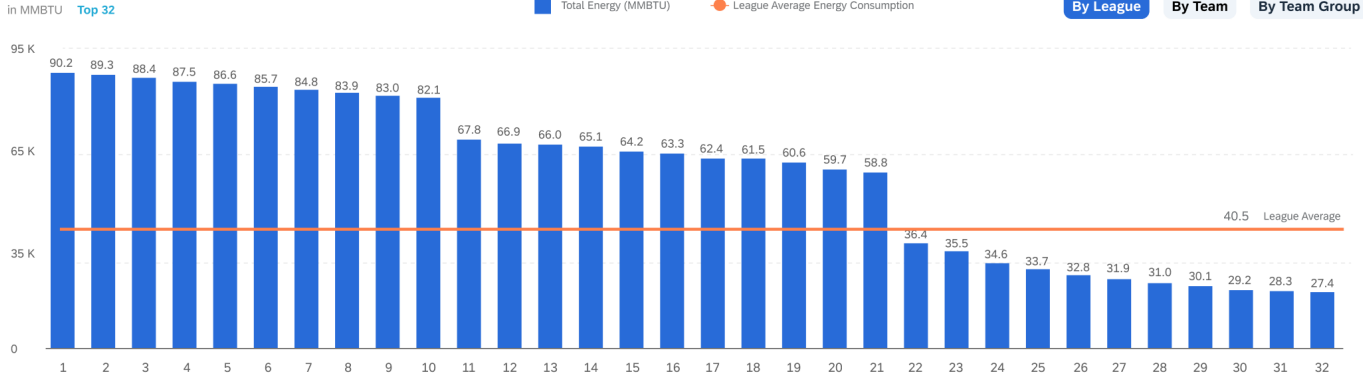
GHG Emissions Scope 1, 2 & 3 in %



Total Greenhouse Gas Emission Over Time in MTCO2e



### Energy Consumption Ranking by NHL Arenas

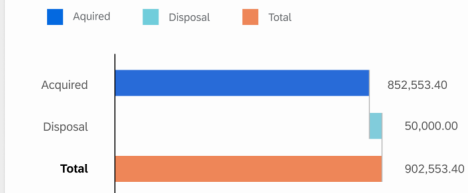


### WATER

Total Water Usage in Gallons/ccf

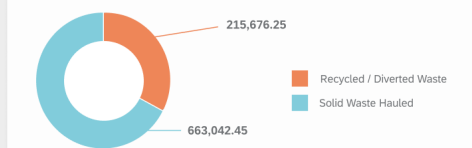
**156,117.00** (-77,213.00)

Total Water Cost in US Dollars

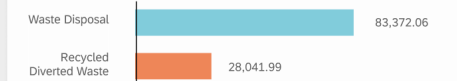


### WASTE

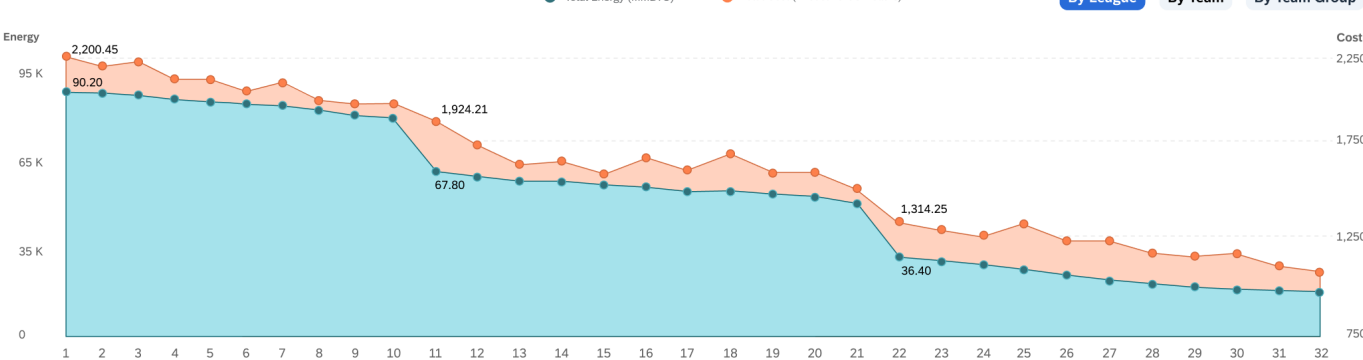
Total Waste in Tons



Cost of Total Waste in US Dollars



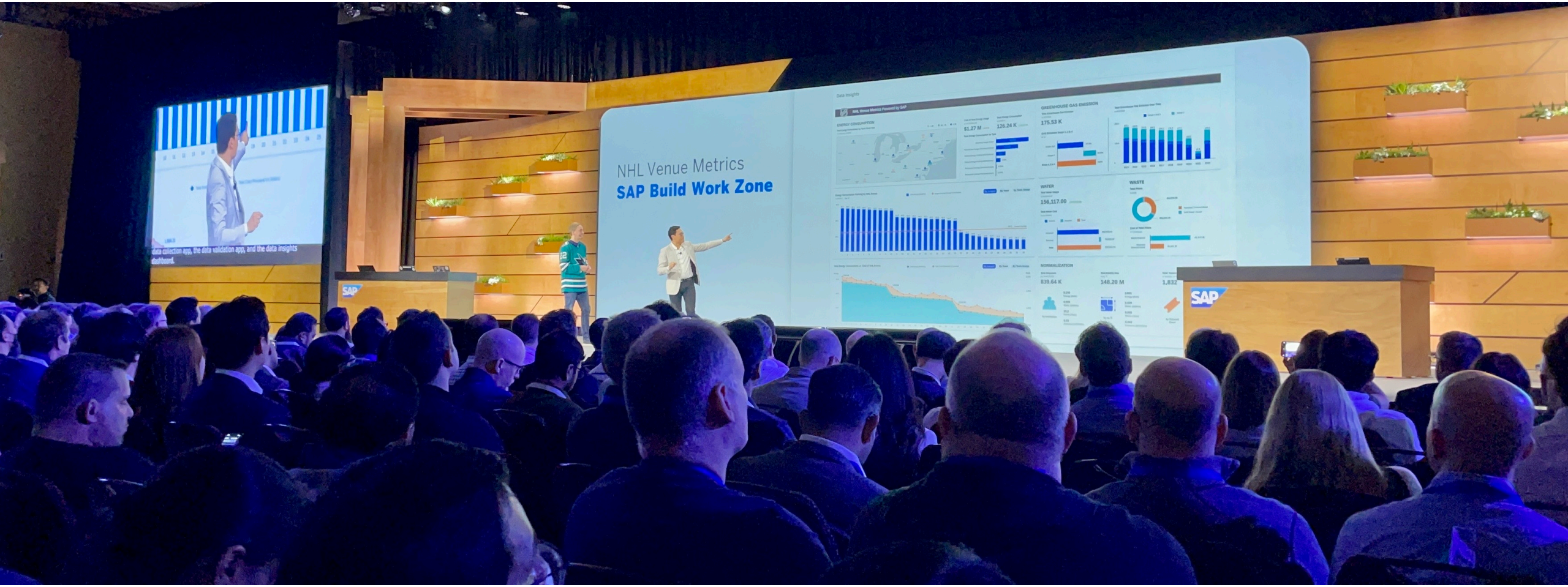
### Total Energy Consumption vs. Cost of NHL Arenas



### NORMALIZATION

<p><b>Total Attendees</b> by Ticket Scans</p> <p><b>839.64 K</b></p> <p>by Attendance</p> <ul style="list-style-type: none"> <li>0.150 Energy (kwh)</li> <li>0.909 Water (Gallon)</li> <li>25.2 Waste (Tons)</li> <li>0.33 Emission (MTCO2e)</li> </ul>	<p><b>Total Facility Size</b> in sq. ft.</p> <p><b>148.20 M</b></p> <p>by sq. ft.</p> <ul style="list-style-type: none"> <li>0.001 Energy (kwh)</li> <li>0.020 Water (Gallon)</li> <li>0.005 Waste (Tons)</li> <li>0.002 Emission (MTCO2e)</li> </ul>	<p><b>Total Ticketed Events</b> in Number of Events Hosted</p> <p><b>1,832</b></p> <p>by Ticketed Event</p> <ul style="list-style-type: none"> <li>68.68 Energy (kwh)</li> <li>84.9 Water (Gallon)</li> <li>415 Waste (Tons)</li> <li>150 Emission (MTCO2e)</li> </ul>
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# NHL Venue Metrics at SAP TechEd



NHL & SAP Develop Venue Metrics, a New Sustainability Platform | TechEd: <https://www.youtube.com/watch?v=4fjs0zzL9WE>



**“We've been tracking this data for a number of years. But in order to take that effort to the next level, we needed to leverage the experts at SAP to help us build a scalable platform.**

**The NHL Venue Metrics tool is a truly game-changing innovation to help us understand our environmental impacts and create viable insights to improve our ecological impact.”**

*- Omar Mitchell, NHL VP of Sustainable Infrastructure and Growth Initiatives*

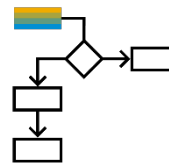


# Automate with **SAP Build Apps**



## **Drag-and-drop the user interface**

Access a pallet of user interface controls, drag them into place, and preview the final result in real time.



## **Create any logic without code**

Drag-and-drop any logic function – sensors, file operations, data functions, animations, and more – onto a canvas.



## **Easily integrate data**

Easily add your own data integrations or get started with some of ours.



# Automate with SAP Build Apps

## Quick Start

**Create an Invoice Approval Process**

**Create a Change and Innovation Approval Process**

**Create a sample To-Do application**

All Projects (5)  Create ↻ ↕ 🔍

Name	Versions	Type	Last Accessed	Members	
<b>Equipment Order Approval Process</b> Process for approving equipment orders		Process Automation	Nov 14, 2:21 pm	Me	⋮
<b>Equipment Order Employee App</b> Application for placing equipment orders		Application <i>Build Apps - Web &amp; Mobile</i>	Nov 14, 2:20 pm	Me	⋮
<b>Equipment Order Admin App</b> Application for managing equipment orders		Application <i>Build Apps - Web &amp; Mobile</i>	Nov 14, 2:18 pm	Me	⋮

# NHL Venue Metrics



NHL Venue Metrics - Work Zone
This Workspace

Home My Workspace Applications Workspaces Tools

Overview Analytics Recommendations Events Content Forums Knowledge Base Tasks

### Tasks

- Approve Club Data for October  
High Priority - Due Nov 14 - Nicholas Siissons - 5 days ago
- Review Data Insights Dashboard  
High Priority - Due Nov 15 - Amin Holland - 4 days ago
- Share Round-up of Best Practices  
High Priority - Due Nov 16 - Saralino Yukel - 3 days ago
- Prepare Next NHL Green Report  
High Priority - Due Nov 17 - Shaheed Smith - 2 days ago

[Go To Tasks](#)

### Data Collection

NHL Venue Metrics - Data Collection Powered by SAP

Club Name:  Fiscal Year:

Data Input (\*\* Required Fields) Last Saved On: 10/27/2022, 6:55:30 PM Local Time [Download Template](#)

Select for Submission	Jul 2022	Aug 2022	Sep 2022	Oct 2022	Nov 2022	Dec 2022	Jan 2023	Feb 2023	Mar 2023
Electricity Usage (kWh) *									
Total Cost of Electricity Usage (Dollar) *									
Renewable Energy Generated (kWh)									
Total Cost of Renewable Energy Purchased (Dollar)									
Offices Purchased (tons CO2)									
Total Cost of Offices Purchased (Dollar)									
WATER									
Total Water Usage (Gallons) *									

### Mobile Data Collection

New Cost Submission

Upload or scan a new document

Manual Entry

Energy Type:

Cost:

Production Area:

### Data Validation

NHL Venue Metrics - Data Validation Powered by SAP

Club Name:  Fiscal Year:

Month/Year	Collected Data	Submitted On	Value	Approved	Replaced	Comment
Jul -2022	Total Cost of Electricity Usage (Dollar)		3,473.00	No	No	
Nov -2022	Total Cost of Electricity Usage (Dollar)		41,248.00	No	No	
Sep -2022	Renewable Energy Generated (kWh)		434,426.00	No	No	
Jan -2023	Renewable Energy Generated (kWh)		4,534.00	No	No	
Nov -2022	Renewable Energy Purchased (Dollar)		432,432.00	No	No	
Jul -2022	Total Cost of Renewable Energy Purchased (Dollar)		432,432.00	No	No	
Sep -2022	Total Cost of Renewable Energy Purchased (Dollar)		431,433.00	No	No	
Dec -2022	Offices Purchased (tons CO2)		432,432.00	No	No	
Sep -2022	Total Cost of Offices Purchased (Dollar)		432,432.00	No	No	
Nov -2022	Total Cost of Approved Water (Dollar)		43,433.00	No	No	

### Data Insights

NHL Venue Metrics Powered by SAP

#### ENERGY CONSUMPTION

Total Energy Consumption by Team-First Year

Cost of Total Energy Usage: **\$1.27 M** (2022) | Total Energy Consumption: **126.24 K** (2022)

Total Energy Consumption by Type

Electricity Usage (kWh)	100%
Renewable Energy Generated (kWh)	0%
Renewable Energy Purchased (Dollar)	0%
Offices Purchased (tons CO2)	0%

#### GREENHOUSE GAS EMISSION

Total Greenhouse Gas Emission

Total Greenhouse Gas Emission Over Time

GHG Emissions Scope 1, 2 & 3

Scope 1	0%
Scope 2	100%
Scope 3	0%

#### WATER

Total Water Usage

Total Water Cost: **156,117.00** (2022)

#### WASTE

Total Waste

Cost of Total Waste: **43,332.00** (2022)

#### NORMALIZATION

Total Facility Size: **148.20 M**

Total Tracked Events: **1,832**

By Month	By Year	By Production Area
0.33 (Energy (kWh))	0.02 (Energy (kWh))	0.02 (Energy (kWh))
0.33 (Energy (kWh))	0.02 (Energy (kWh))	0.02 (Energy (kWh))
0.33 (Energy (kWh))	0.02 (Energy (kWh))	0.02 (Energy (kWh))



# NHL Venue Metrics Story Resources

20 NHL  
Published  
Stories  
and  
counting!

NHL
Scores
News
Video
Schedule
Standings
Stats
Players
App
Tickets
Fantasy
Shop
Teams
Community
Stream Games
EN

NHL partners with SAP on digital platform to gauge carbon footprint

**NHL partners with SAP on digital platform to gauge carbon footprint**  
Technology will allow League to reduce ecological impact

by William Douglas @WDouglasNHL / NHL.com Staff Writer

October 26, 2022

f t l e

NHL Venue Metrics Powered by SAP

**ENERGY CONSUMPTION**  
Total Energy Consumption by Team Fiscal Year

**Cost of Total Energy Usage**  
Total Energy Consumption  
\$1.27 M (+40 K) 126.24 K (-18.45 K)

**Total Energy Consumption by Type**

Electricity Usage (whw)	43.6%
Natural Gas Usage (Therms/MBtu)	32.3%
District Energy Cooling (BTU/MBtu)	17%
District Energy Heating (BTU/MBtu)	5.8%
Renewable Energy Generated (whw)	0.34%
Renewable Energy Purchased (whw)	0.20%

**GREENHOUSE GAS EMISSION**  
Total Greenhouse Gas Emission

**175.53 K**

GHG Emissions Scope 1, 2 & 3

**Energy Consumption Ranking by NHL Arenas**

**Total Energy Consumption vs. Cost of NHL Arenas**

**WATER**  
Total Water Usage

**156,117.00**

Total Water Cost

**WASTE**  
Total Waste

**235,676.29**

Cost of Total Waste

**NORMALIZATION**

Total Attendees	839.64 K
Total Facility Size	148.20 M
Total Ticketed Events	1,832

NHL partners with SAP on digital platform to gauge carbon footprint

**PERFECT GIFTS**  
for the holidays

**NHL SHOP.COM**  
A Fanatics Experience

**SHOP NOW**

NHL INSIDER

Karlsson healthy again, producing at elite rate with Sharks

NEWS

Bertuzzi out six weeks for Red Wings after surgery

THE BUZZ

NHL Buzz: Laine to return for Blue Jackets against Jets

# Designing for **Sustainability** (Our Lessons Learned)

- **You will need basic knowledge about sustainability terminology, tracking and measurement.**
- **It is crucial to understand customers goals and perspective on sustainability e.g. what are their current environmental initiatives and future aspirations.**
- **Sustainability can be daunting topic, break large long-term goals into manageable chunks /phases.**
- **Sustainability data will come from multiple sources and some likely will come from paper-based sources. Identify the data you have access to.**
- **A lot of times people spend their focus on visualizations (e.g. pie charts or bar charts) when they should be spending more time on the KPIs in order to truly make an impact because this will help to make the right decisions/actionable things.**



# Humanizing Business through Design and putting people at the center.

We apply a Human-Centered Innovation approach to transform business data into customer value with SAP Business Technology Platform



# SAP AppHaus Network – 23 AppHaus Locations

## 5 SAP AppHaus & 18 SAP AppHaus Partners

### SAP AppHaus



### SAP AppHaus Network partners



### AppHaus Network



<https://apphaus.sap.com/network>



# SAP AppHaus Network

**81,000+** visitors

**3,300+** workshops/events

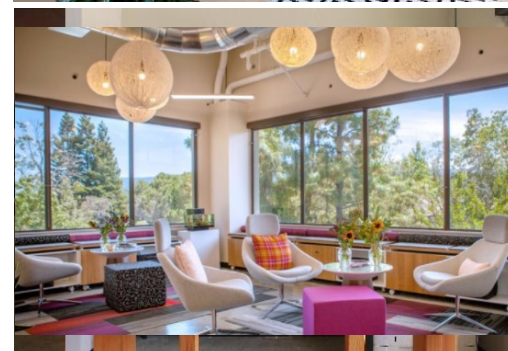
**250+** customer success stories

**40** awards and recognitions

**1000+** customer projects

**15,000+** people enabled in Design Thinking

**12,000+** employees at partners



# Innovation Toolkit

The Innovation Toolkit offers free resources to help organizations practice innovation on a daily basis. More than **50 different innovation methods** to help and enable organizations apply the Innovation Framework and SAP's Human-Centered Approach to Innovation in their own projects, virtually or on-site.



The toolkit is enhanced on a regular basis with new content, for example Enterprise Architecture assets.

## Innovation Methods

Tools

**Innovation Culture Assessment**  
An tool to asses your organization's innovation readiness. Identify barriers for innovation and develop strategies to overcome them.

**Scenes**  
A tool to create visual stories about product and service ideas fast, collaboratively and iteratively, no drawing skills required.

**Dot Dot Bot**  
A collaborative tool for anyone who wants to build a chatbot to solve a challenge but doesn't know where to begin.

## Publications

Articles

**Five Steps to Diversity by Design**

**Does the World Really Need Designers?**

**Design Thinking & Coach Camp: The Best Of Both Worlds**

**3 Things To Look For In A User Researcher**

## Courses

Learning

**Design Thinking and Challenge Management**

**Software Design for Non-Designers**



A modern lounge area with large windows, contemporary furniture, and spherical pendant lights. The room features a mix of neutral and vibrant colors, including a pink ottoman and patterned armchairs. The text is centered in a white box over the middle of the image.

WHAT IS YOUR NEXT STEP TO  
INNOVATE WITH SAP BTP?



# Thank you

**Sally Lawler Kennedy**  
Sr. Director Innovation & Customer Experience  
[sally.lawler.kennedy@sap.com](mailto:sally.lawler.kennedy@sap.com)

**Frank Densborn**  
Enterprise Architect  
[frank.densborn@sap.com](mailto:frank.densborn@sap.com)

**Carolina Robertson**  
Designer  
[carolina.robertson.prego.cadaval@sap.com](mailto:carolina.robertson.prego.cadaval@sap.com)



# APPENDIX

# NHL Venue Metrics Published Stories & Videos

- NHL.com: <https://www.nhl.com/news/nhl-partners-with-sap-on-digital-platform-to-gauge-carbon-footprint/c-336791566>
- SAP News Center: <https://news.sap.com/2022/10/sap-nhl-develop-nhl-venue-metrics/>
- Forbes: [NHL And SAP Introduce New Venue Metrics Tool To Aid Sustainability Efforts](#)
- SportTechie: [NHL Launches New Sustainability Platform, NHL Venue Metrics, With SAP; How the League Will Use Data to Refine Hockey's Footprint](#)
- ZDNet: [The NHL and SAP team up to boost sustainability efforts using new NHL Venue Metrics platform](#)
- insideSAP: <https://insidesap.com/sap-business-technology-platform-powers-nhl-venue-metrics/>
- Sportspromedia: <https://www.sportspromedia.com/news/nhl-sap-venue-metrics-sustainability-carbon-footprint/>
- **Sports Business Journal**: <https://www.sportsbusinessjournal.com/Daily/Issues/2022/11/16/Leagues-and-Governing-Bodies/NHL-Greenhouse-Emissions-NHL-Venue-Metrics-powered-by-SAP.aspx>
- Coliseum: <https://www.coliseum-online.com/nhl-sap-tie-up-to-determine-carbon-footprint/>
- **USA Sports News**: <https://usasports.news/ola-electric-motorcycles-is-set-to-become-a-reality-in-2023-heres-what-to-expect/>
- **Sustainability Sport**: <https://sustainability.sport/national-hockey-league-and-sap-realize-ice-hockey-sustainability-platform/>
- **INSIDER Sport**: <https://insidersport.com/2022/10/28/nhl-turns-to-sap-for-sustainable-technology-solutions-via-new-platform/>
- **egreenews**: <https://egreenews.com/sap-and-the-nhl-develop-nhl-venue-metrics-a-new-sustainability-platform-to-help-reduce-the-leagues-ecological-impact-green-sports-alliance/> (dashboard image)
- **Aviation Analysis**: <https://www.aviationanalysis.net/national-hockey-league-and-sap-realize-ice-hockey-sustainability-platform/>
- **Sports Business**: <https://www.sportbusiness.com/news/sap-and-nhl-develop-sustainability-platform/>
- **Wirefan**: <https://www.wirefan.com/2022/10/the-nhl-and-sap-team-up-up-to-boost-sustainability-efforts-using-new-nhl-venue-metrics-platform/>
- **TechVisor**: <https://www.techvisor.nl/Artikelen/9296/national-hockey-league-en-sap-ontwikkelen-duurzaamheidsplatform-voor-ijshockey?list=y>
- **amolivia**: <https://amolivia.com/2022/11/16/the-nhl-is-deploying-a-new-cloud-based-app-for-tracking-greenhouse-emissions-in-its-arenas-2/>
- **NHL と SAP が協力して、新しい NHL Venue Metrics ...**: <https://www.gamingdeputy.com › nh...>
- **TechTarget**: <https://www.techtarget.com › searchsap › news › SAP-low...>

## NHL Story Videos

- NHL video: <https://fb.watch/ggrP2VGUhx/>
- NHL & SAP Develop Venue Metrics, a New Sustainability Platform | TechEd: <https://www.youtube.com/watch?v=4fjs0zzL9WE>



# Based on experience of **more than 1000** customer projects



**Parkland Health and Hospital Systems**



**Costain**



**Toyota Motor Corporation Australia**



**Border States Industries Inc.**



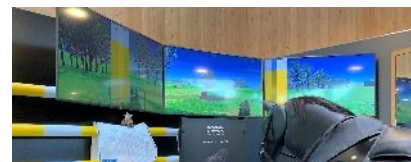
**GS Caltex**



**MTU Rolls Royce Power Systems**



**Kakao Enterprise**



**Walldorf Riding Club**



**Gazprom Marketing & Trading Ltd.**



**OP 4.1**



**AGL Energy**



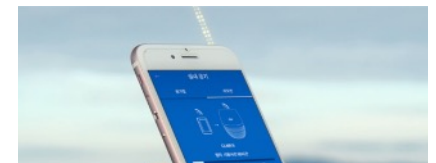
**Royal Greenland A/S**



**Iren SpA**



**Paul Hartmann AG**



**Clair**



**SunRice**



**Ottogi Co. Ltd.**



**Vestas Wind Systems A/S**



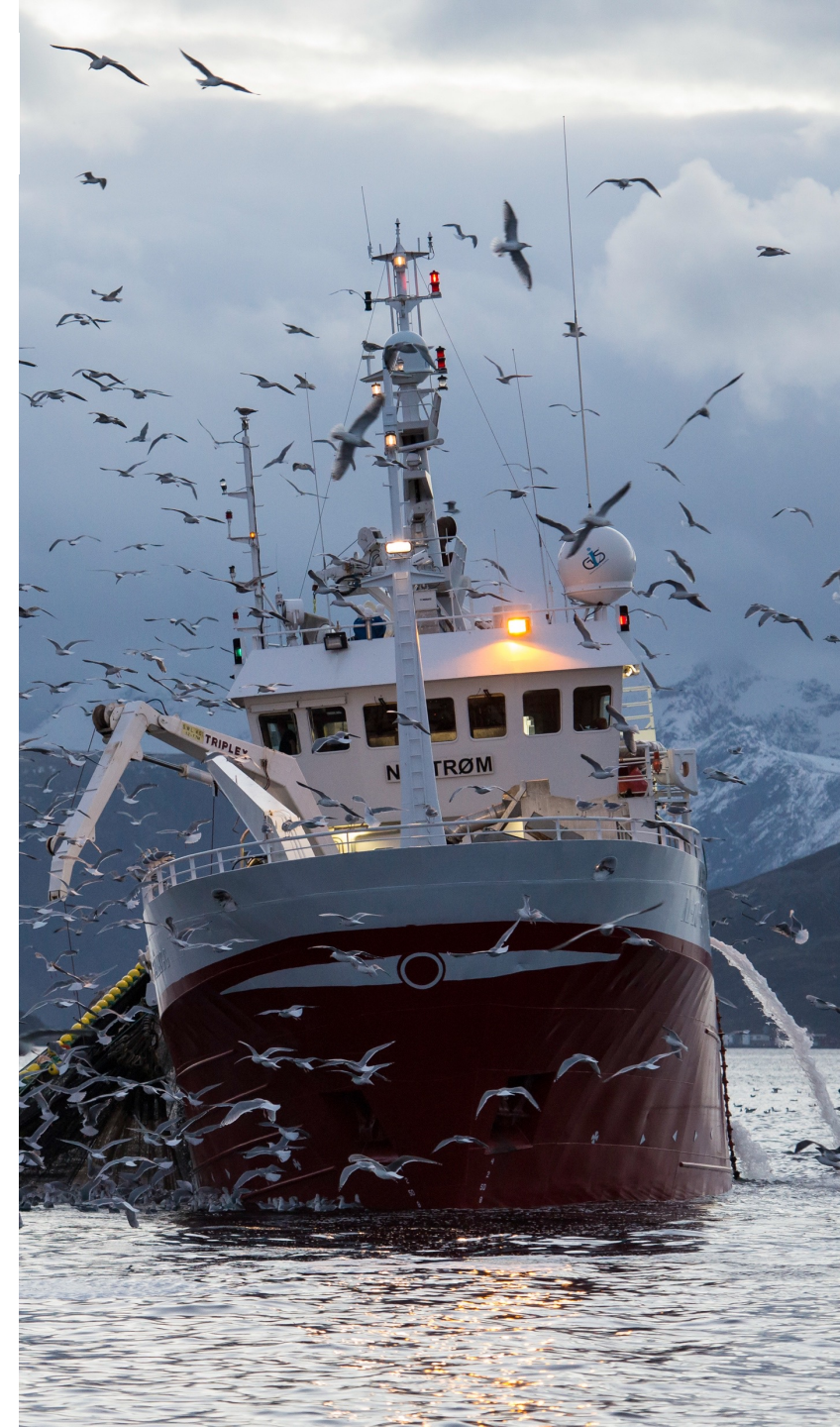
**Taronga Conservation Society Australia**




**Severstal**



# Royal Greenland Supporting Sustainable Fishing from Sea to Fishermen to Table



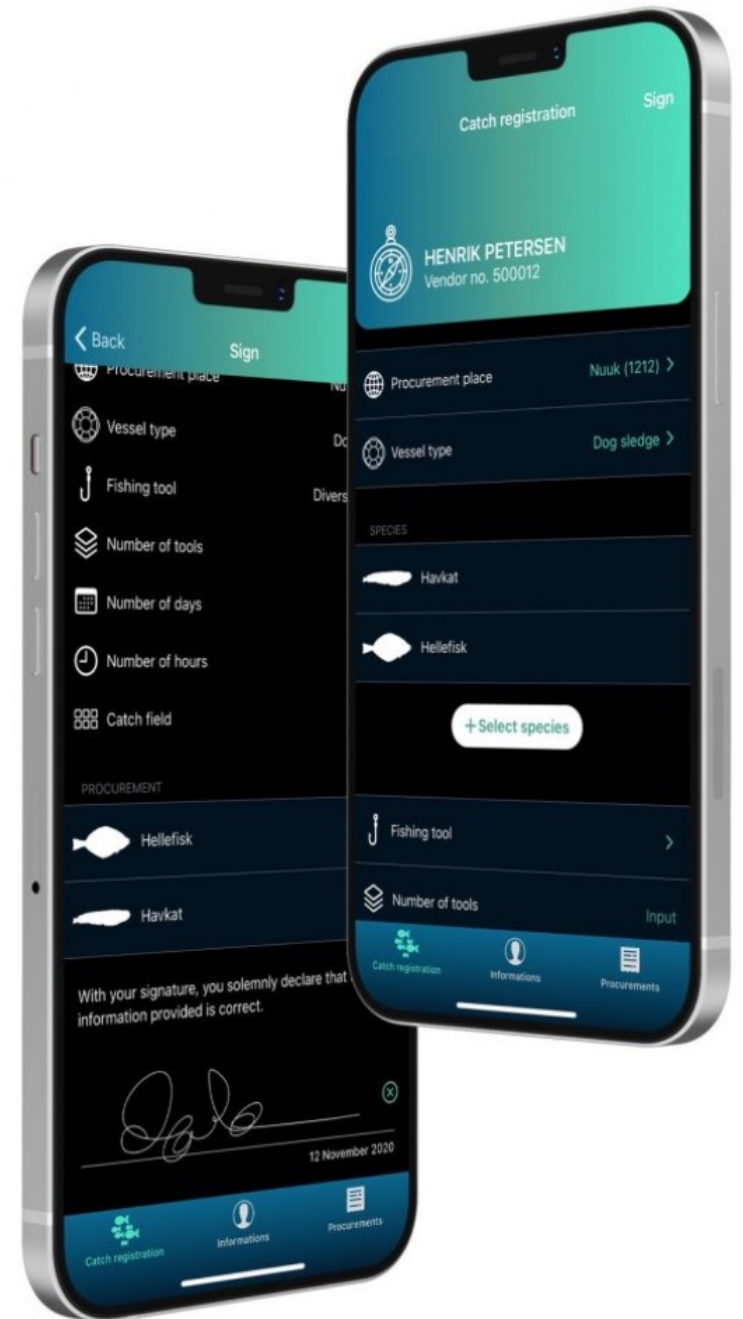




**2,200** fishermen with access to the technology  
**70,000** purchase orders converted from paper to digital  
**€5.3B** worth of fish annually  
**0** hours of training required for fishermen

*“We try to digitize the process of bringing the fish into the factories and tie this together with the entire quality control and registration process. We have developed apps for all these scenarios, and we use this platform strategically to build a close partnership with the local catchers.”*

– Lars Bo Hassinggaard, Corporate IT Manager, Royal Greenland A/S



# Vestas

## Enterprise mobility of tomorrow



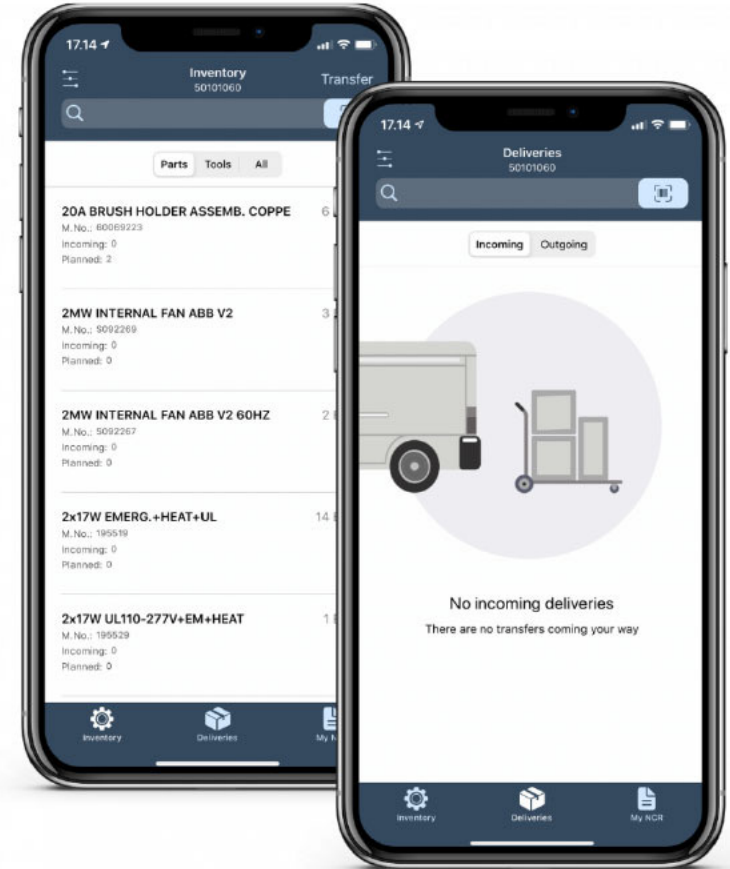




**400.000** hours saved per year

**10.000** users all over the world

**80.000** turbines serviced





# Further Helpful Information

## **SAP's Human-Centered Approach to Innovation**

<https://apphaus.sap.com/approach>

## **SAP Toolkit for Innovation**

<https://apphaus.sap.com/toolkit>

## **Discovery Center – Use Case Packages**

[https://discovery-center.cloud.sap/missionssearch/UCF\\*/](https://discovery-center.cloud.sap/missionssearch/UCF*/)

## **SAP Business Technology Platform – Use Cases**

[https://www.sap.com/products/business-technology-platform/use-cases.html?sort=title\\_asc](https://www.sap.com/products/business-technology-platform/use-cases.html?sort=title_asc)

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