

# How energy and carbon intensive is your school district?

Compare with others in British Columbia

9<sup>TH</sup> ANNUAL PUMA BENCHMARKING SUMMARY  
For BC School Districts: 2021 Calendar Year

**PUMA**<sup>TM</sup>  
PUMA Utility Monitoring Inc.

# Scope

The sites included in the benchmarks are from the following BC School Districts that subscribed to monthly PUMA utility monitoring software and services during the calendar year 2021.

## Coastal



## Interior & North



## About PUMA

PUMA comprises a combination of software and services that track over 23,000 electrical, natural gas, water, and other fuel accounts for government, commercial, and institutional customers. Since launching online in 2009, more and more organizations have enlisted PUMA to help track and analyze building energy use.

PUMA is currently used by over 20 Energy Managers, and more than 50 organizations across Canada. Our utility tracking software and services save time and money for owners of multiple properties by turning data into actionable information.

## About this Report

Each year the PUMA team puts together a benchmarking report for school districts, advanced education and local governments. Based on compiled data from PUMA, this report enables the comparison of similar sites across each sector.

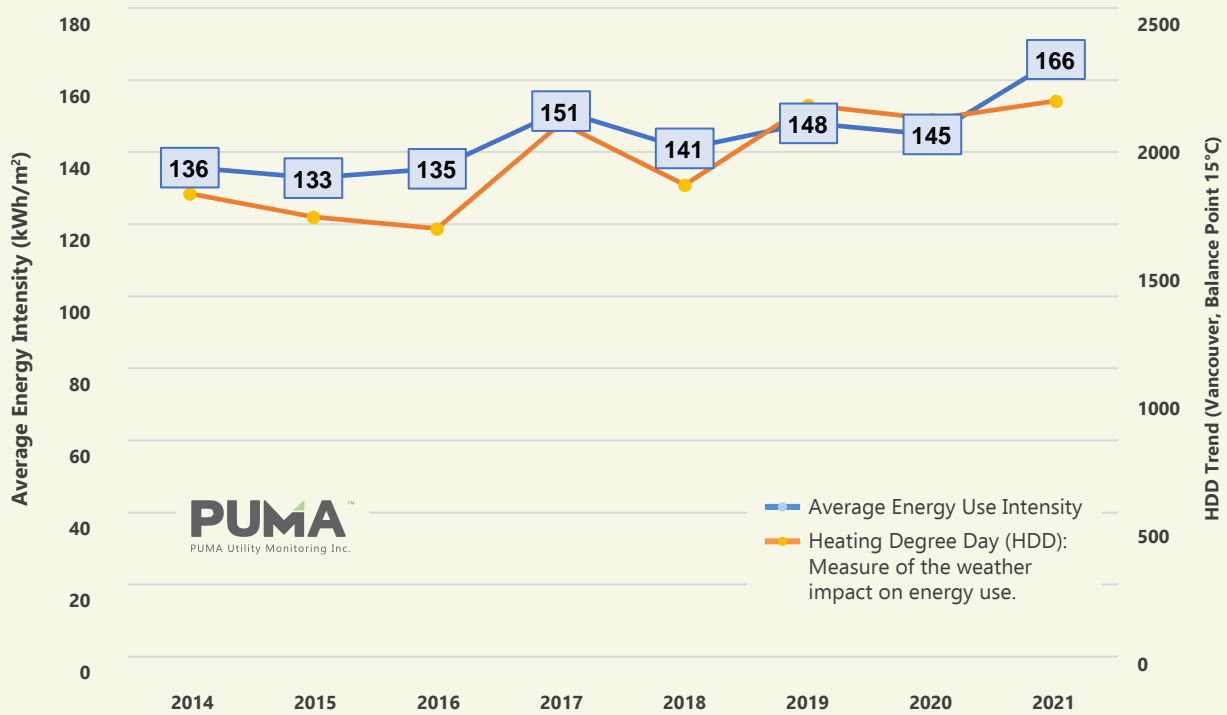
[www.pumautilitymonitoring.ca](http://www.pumautilitymonitoring.ca)

# COVID-19 and 2021 Benchmarks

With COVID-19 persisting through 2021, it has continued to affect our daily lives and, in turn, our building energy use. We have continued to quantify this impact to help our clients understand both increases and decreases in energy use. We believe [our presentation in April 2021<sup>1</sup>](#) on how our techniques can reveal the scale of changes remains relevant to our understanding of our energy use patterns in 2021.

Since **Benchmarking compares buildings during the same time period**, and the behaviour changes made in 2020 persisted across the sample area – British Columbia – **the comparison between how buildings performed remains valid**. In an update to the April presentation referenced above, we found a substantial increase in the use of heating fuels. School Districts can expect in general that if they were saving at a weather adjusted rate of 20% per year in natural gas use prior to COVID, that they will now only be saving at a rate per year of 5%. This corresponds to a similarly large increase in greenhouse gas use emissions. It is visible in the chart below as an increase in EUI from 145 ekWh/m<sup>2</sup> to 166 ekWh/m<sup>2</sup> between 2020 and 2021, years that otherwise had similar HDDs. With the significant changes we have all experienced over the past 2 years, the history of average performance provides important context and is shown below for this sector.

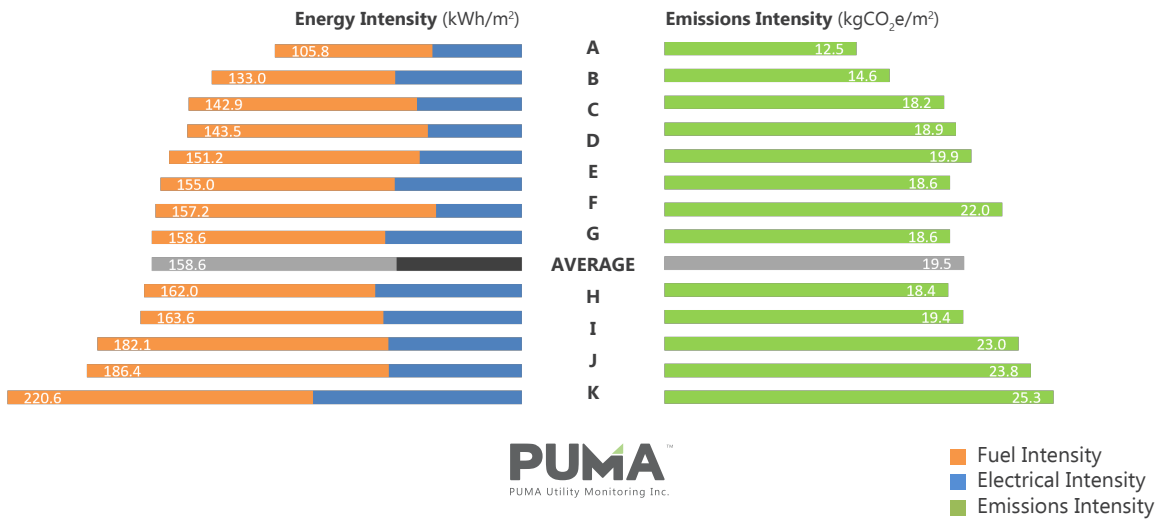
School Districts Energy Use Intensity (EUI) Trend Over 8 Years



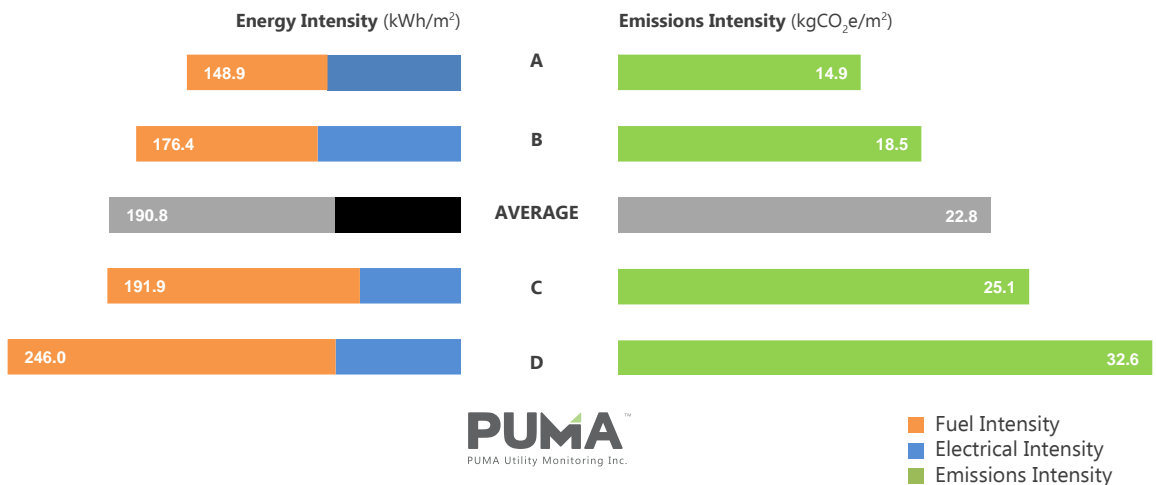
<sup>1</sup> View the presentation recording, "Quantifying the impact of COVID-19 on your energy bill": [www.pumautilitymonitoring.ca/news-2021/may](http://www.pumautilitymonitoring.ca/news-2021/may)

# How energy and carbon intensive is your school district?

## 13 Coastal BC School Districts Calendar Year 2021

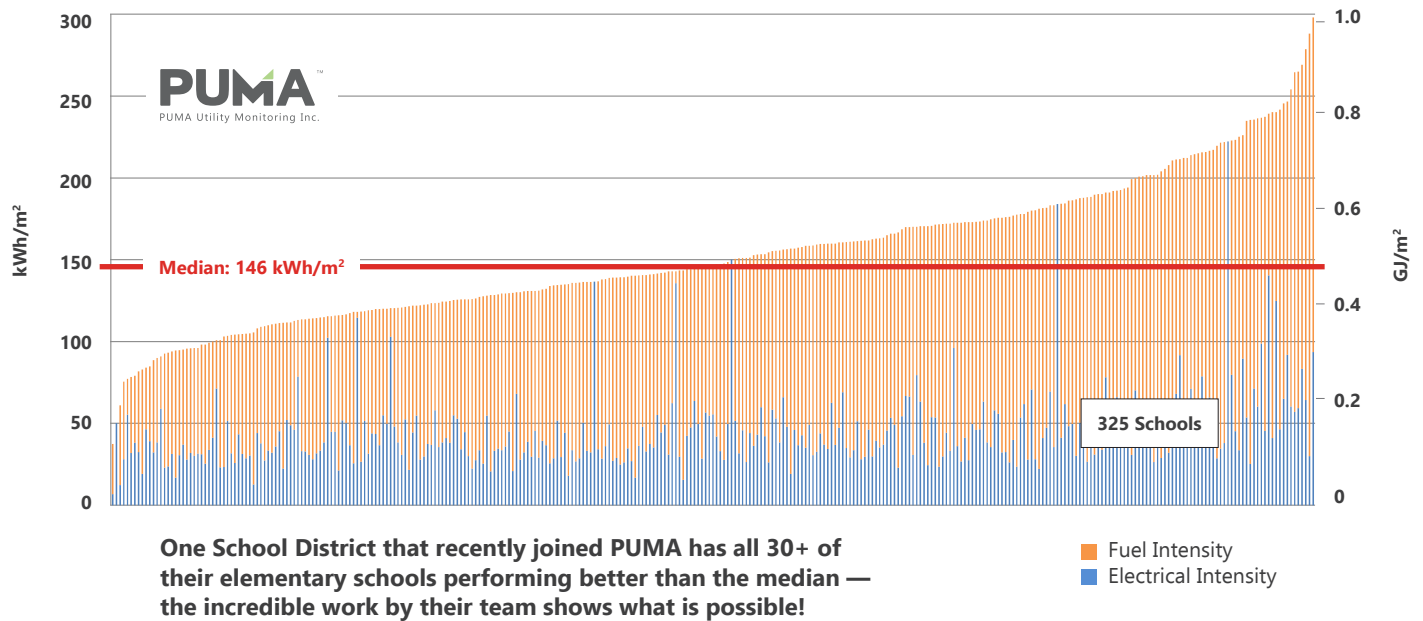


## 4 Interior & Northern BC School Districts Calendar Year 2021

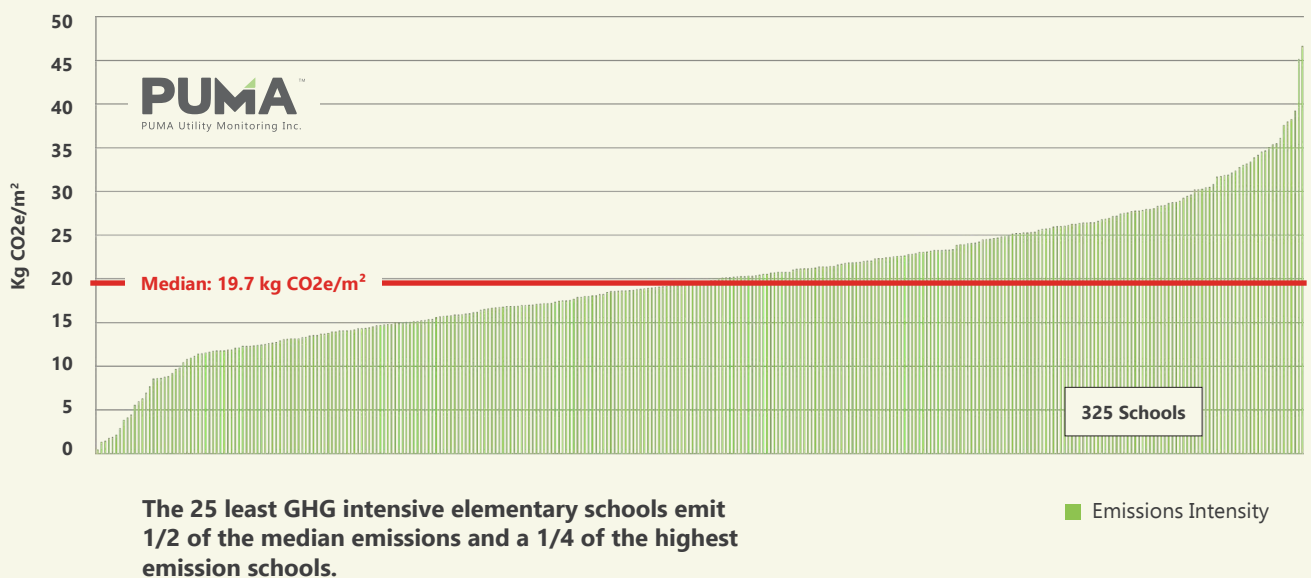


# Are your **elementary schools** better or worse compared to other schools in BC?

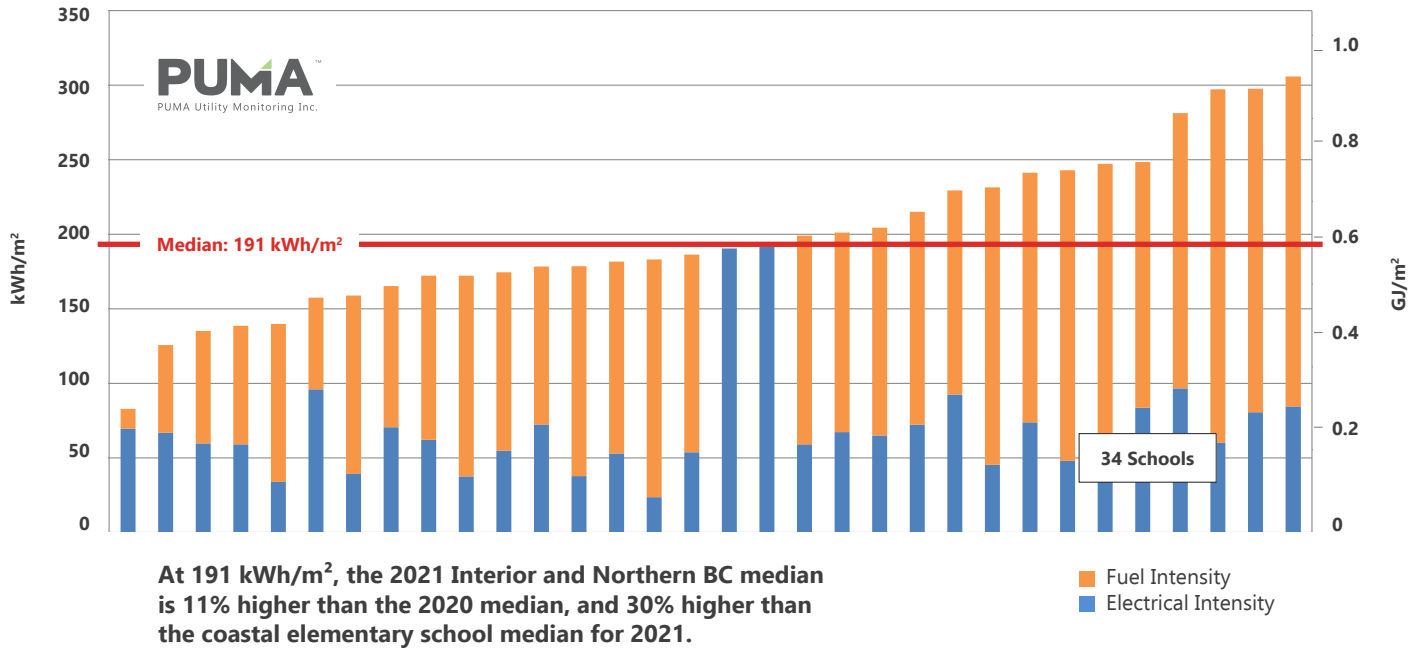
## Coastal BC Elementary Schools EUI Calendar Year 2021



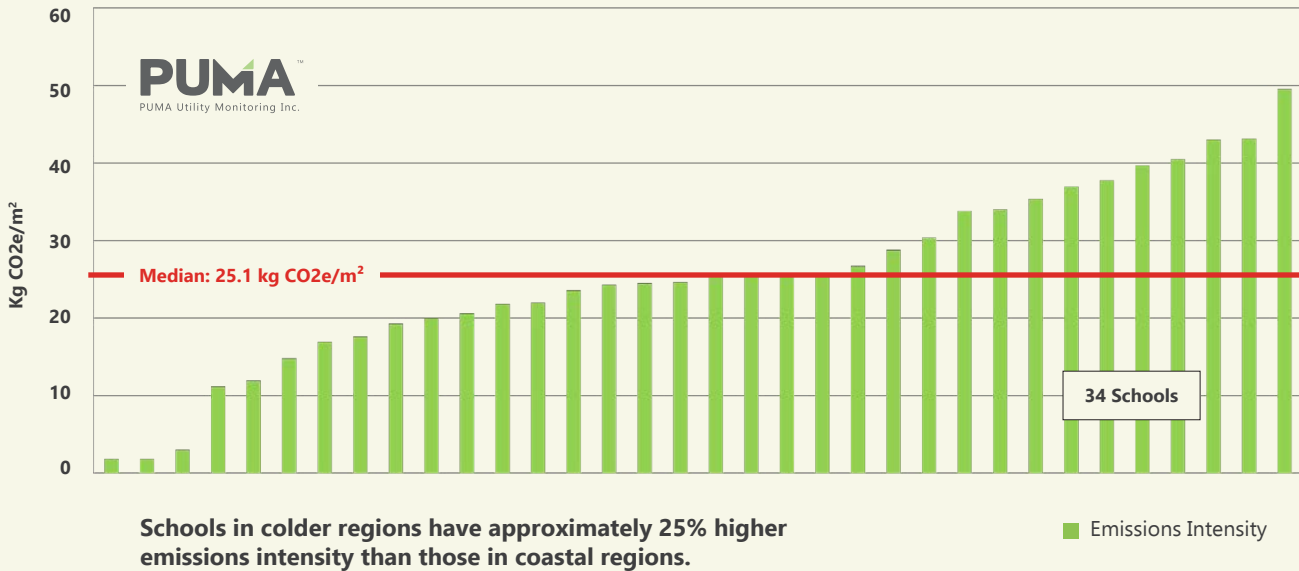
## Coastal BC Elementary Schools GHGi Calendar Year 2021



## Interior & Northern BC Elementary Schools EUI Calendar Year 2021



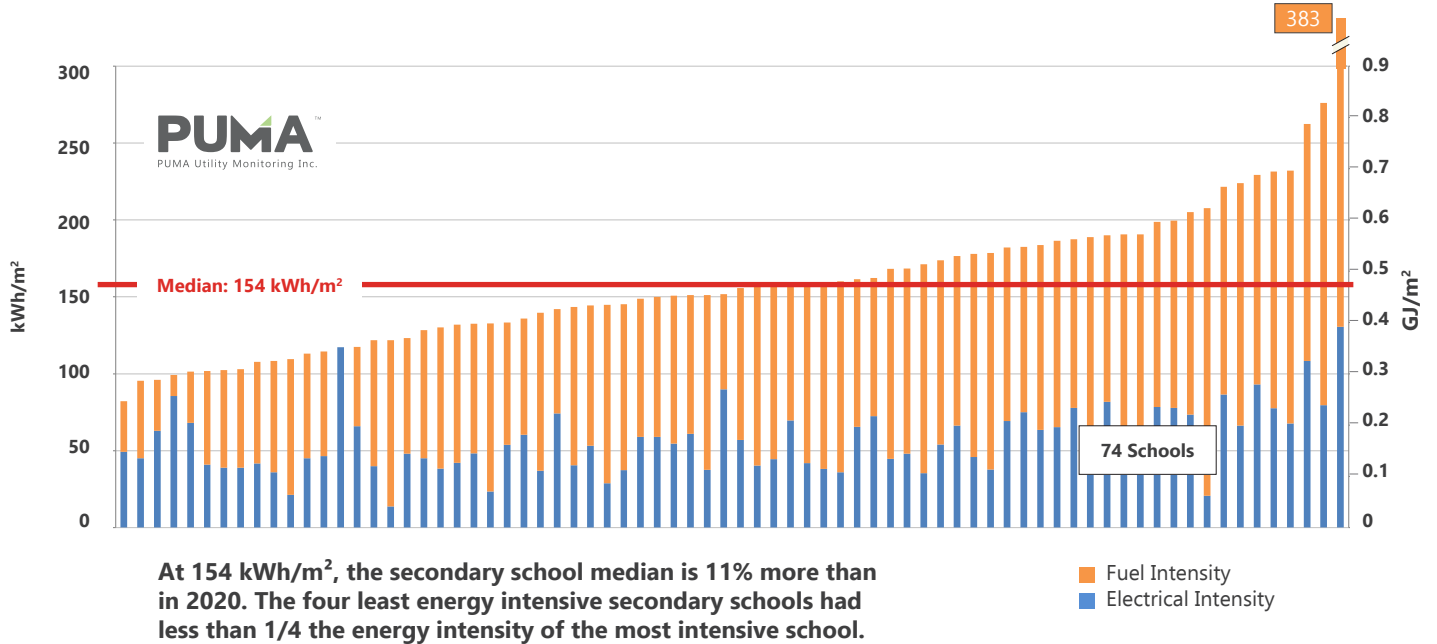
## Interior & Northern BC Elementary Schools GHGi Calendar Year 2021



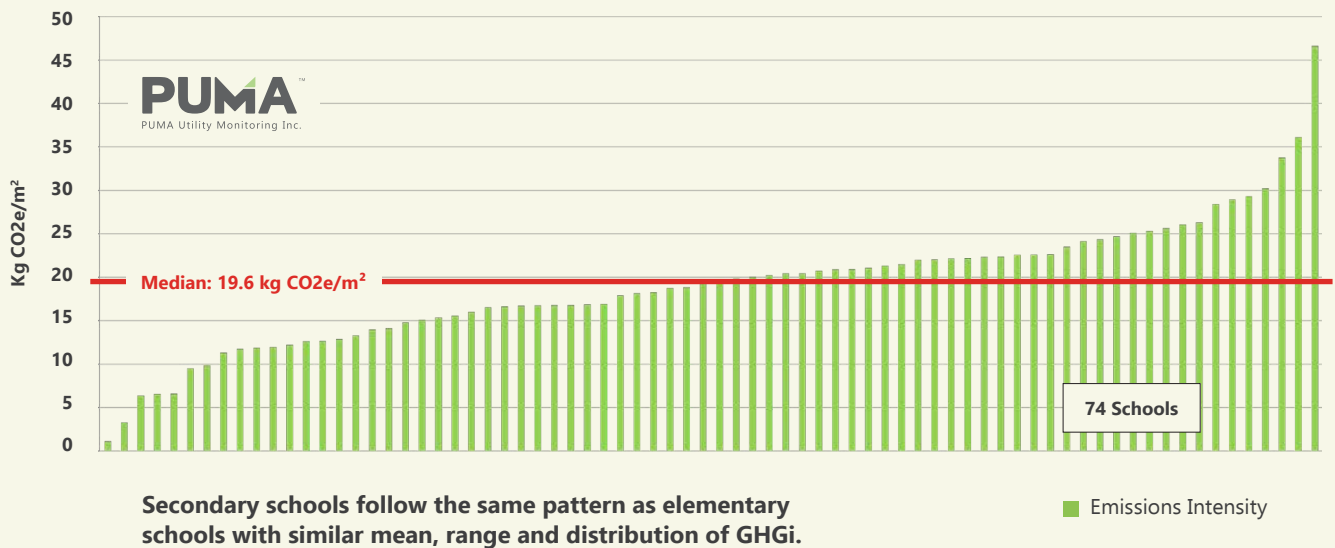


# Are your **secondary schools** better or worse compared to other schools in BC?

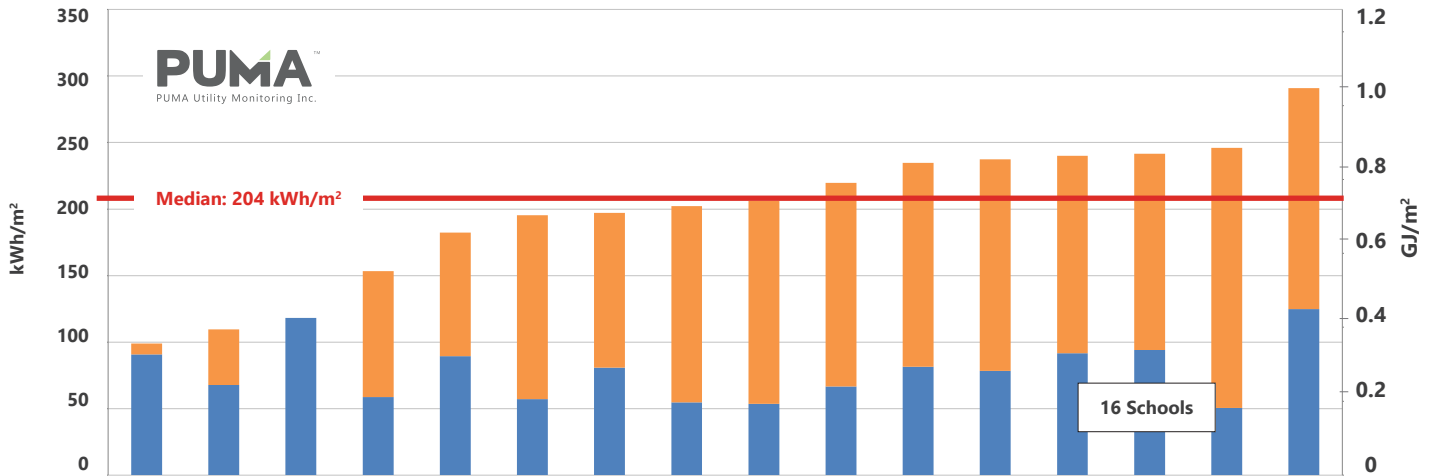
## Coastal BC Secondary Schools EUI Calendar Year 2021



## Coastal BC Secondary Schools GHGi Calendar Year 2021

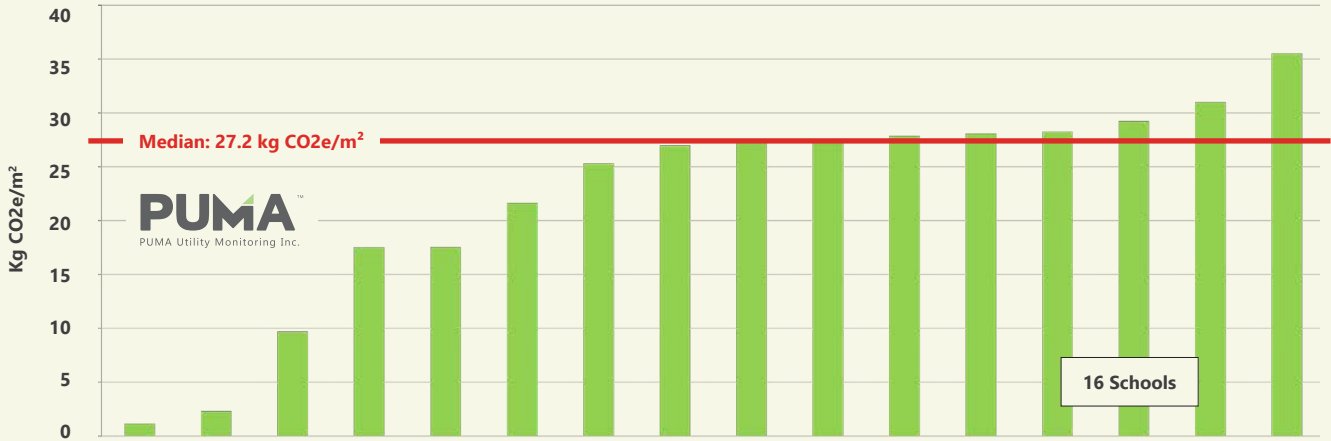


Interior & Northern BC Secondary Schools EUI Calendar Year 2021



Leading the group with 100 kWh/m<sup>2</sup>, in part as a result of a geothermal field, the best performing school shows what is possible with energy efficiency and upgrades. It uses about 1/3 the energy of the most energy intensive school.

Interior & Northern BC Secondary Schools GHGi Calendar Year 2021

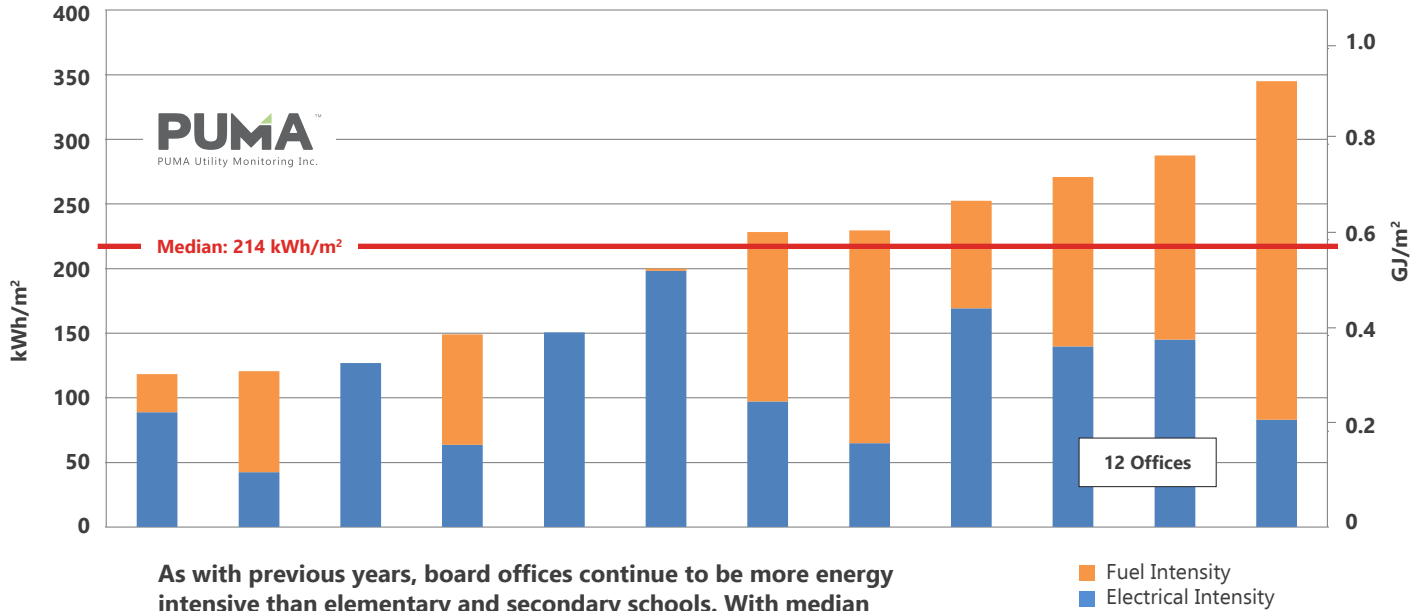


Although half the schools operate close to the median GHGi, the other half shows that a much lower GHGi is possible.

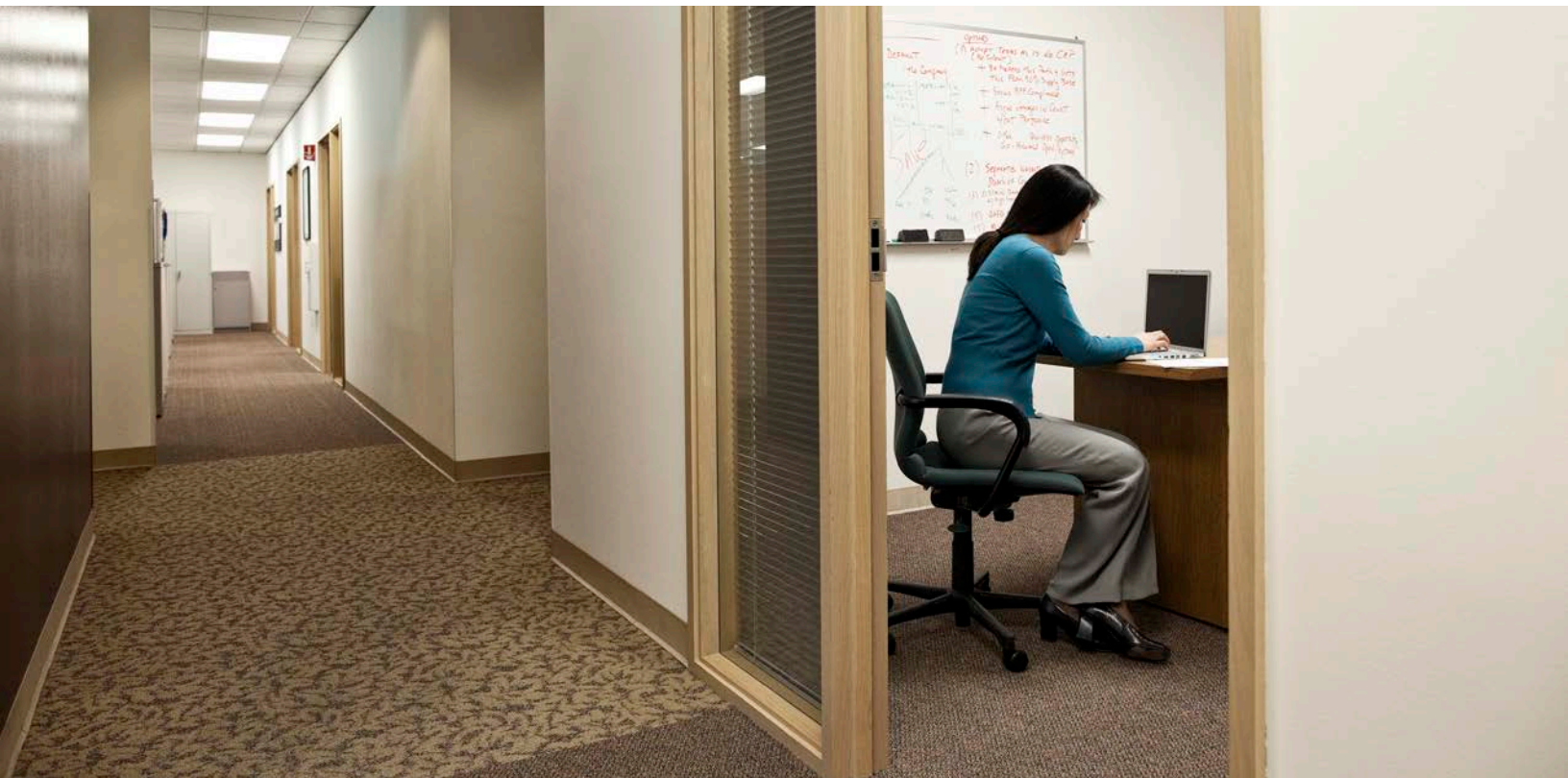


# Are your **board offices** better or worse compared to others in BC?

## Coastal Board Offices EUI Calendar Year 2021



As with previous years, board offices continue to be more energy intensive than elementary and secondary schools. With median 214 kWh/m<sup>2</sup>, board offices are 42% more energy intensive than secondary schools with median 154 kWh/m<sup>2</sup>.



# 2021 Median Energy Use Intensity Summary

## Coastal BC

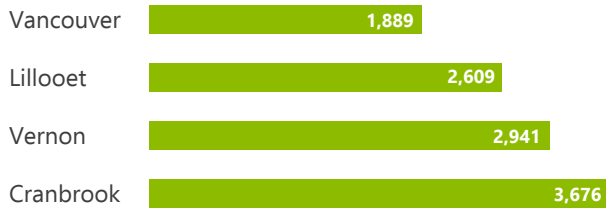
School District Building Type	Median Energy Use Intensity (EUI)	Median Emissions Intensity (GHGi)	Sample Size
Elementary	147 kWh/m <sup>2</sup>	19.7 kg CO <sub>2</sub> e/m <sup>2</sup>	325 buildings
Secondary	154 kWh/m <sup>2</sup>	19.6 kg CO <sub>2</sub> e/m <sup>2</sup>	74 buildings
Board Offices	214 kWh/m <sup>2</sup>		12 buildings
Overall District Average	158 kWh/m <sup>2</sup>		11 districts

## Interior & Northern BC

School District Building Type	Median Energy Use Intensity (EUI)	Median Emissions Intensity (GHGi)	Sample Size
Elementary	191 kWh/m <sup>2</sup>	25.1 kg CO <sub>2</sub> e/m <sup>2</sup>	34 buildings
Secondary	204 kWh/m <sup>2</sup>	27.2 kg CO <sub>2</sub> e/m <sup>2</sup>	16 buildings
Overall District Average	191 kWh/m <sup>2</sup>		4 districts



## Typical Heating Degree Days per year



# PUMA<sup>TM</sup>

PUMA Utility Monitoring Inc.


PUMA is an affordable and effective way to compare the performance of all the buildings in your portfolio, including the ability to normalize for weather.


[www.pumautilitymonitoring.ca](http://www.pumautilitymonitoring.ca)

Contact us to schedule a free demo:

E: [info@pumautilitymonitoring.ca](mailto:info@pumautilitymonitoring.ca)

T: 604.298.4858

 @pumaprism

 @puma-utility-monitoring