Figure 1. A time series plot under the CN scenario of the hourly CO$_2$ pollutant intensity, $P_I_{CO_2}(t)$, which represents how much CO$_2$ is emitted per MWh of electricity consumed on the transmission system in each hour.
Figure 2. A time series plot under the NCN scenario of the hourly CO$_2$ pollutant intensity, $PI_{CO_2}(t)$, which represents how much CO$_2$ is emitted per MWh of electricity consumed on the transmission system in each hour.
Figure 3. A zoom-in view of Figure 1, showing the hourly variation in $PI_{CO_2}(t)$ under the CN scenario. Each peak is separated by 24 hours.
Figure 4. A time series plot of the hourly NO\textsubscript{X} pollutant intensity, $PI_{NOX}(t)$, which represents how much NO\textsubscript{X} is emitted per MWh of electricity consumed on the transmission system in each hour.
Figure 5. A time series plot of the hourly SO$_2$ pollutant intensity, $PI_{SO_2}(t)$, which represents how much SO$_2$ is emitted per MWh of electricity consumed on the transmission system in each hour.
Figure 6. A plot under the CN scenario of the average daily CO$_2$ pollutant intensity profile, $PI_{dayCO_2}(h)$, which represents how, on average, the CO$_2$ pollutant intensity varies with the hour of the day.
Figure 7. A plot under the NCN scenario of the average daily CO$_2$ pollutant intensity profile, $P_{I\text{day}CO_2}(h)$, which represents how, on average, the CO$_2$ pollutant intensity varies with the hour of the day.
Figure 8. A plot of the average daily NO$_X$ pollutant intensity profile, $PI_{day NO_x}(h)$, which represents how, on average, the NO$_X$ pollutant intensity varies with the hour of the day.
Figure 9. A plot of the average daily SO\textsubscript{2} pollutant intensity profile, $P I_{daySO_2}(h)$, which represents how, on average, the SO\textsubscript{2} pollutant intensity varies with the hour of the day.
Figure 10. A scatter plot showing the correlation between $PI_{CO_2}(t)$ and Boston load zone LMP on an hourly basis under the CN scenario. Each circle represents one hour in the analyzed time period. Although higher priced hours tend to have higher CO$_2$ pollutant intensity, there are high priced hours with low CO$_2$ pollutant intensity and low priced hours with high CO$_2$ pollutant intensity so that LMP is not a good proxy for CO$_2$ pollutant intensity.
Figure 11. A scatter plot showing the correlation between $P_{CO_2}(t)$ and system load on an hourly basis under the CN scenario. Each circle represents one hour in the analyzed time period. As with LMP, although there is a clear correlation between CO$_2$ pollutant intensity and system load, there are also many hours with low CO$_2$ pollutant intensity and high system loads and vice versa.
Figure 12. A scatter plot showing the correlation between $PI_{CO_2}(t)$ and the minimum temperature on a given day under the CN scenario. Each circle represents one hour in the analyzed time period.
Figure 13. A scatter plot showing the correlation between $P_{ICO_2}(t)$ and the maximum temperature on a given day under the CN scenario. Each circle represents one hour in the analyzed time period.
Figure 14. A time series of Eq. 10 showing how well the generation mix, import, export, and system load data match during each hour of the analyzed time period. The two peaks in September and the two peaks near the end of the analyzed time period correspond to gaps in the generation mix data that were filled with the gap filling procedure described in the text.