

ENERGY
(Traction)

Not the Blue Line project's official data,
designed and run for his own personal and educational evaluation purposes only.

Bangkok Subway Blue Line Energy Calculation

| Year | Line Loading (p/d/h) | Train Consist (car) | Optimum Trains Running | Optimum Headway (mm:ss) | Operating Headway, mm:ss | | | | | Trains Running | | | | | Total Km Per Year | Train Hours Per Year | Total MWh Per year | Avg. Daily Capacity (10 ³ pass) |
|------|---------------------------|--------------------------|------------------------|----------------------------|--------------------------|----------|-------|-------|-------|----------------|----------|------|------|-----|----------------------|-------------------------|-----------------------|---|
| | | | | | Working Days | | Sats | Suns | PHs | Working Days | | Sats | Suns | PHs | | | | |
| | | | | | Peak | Off Peak | | | | Peak | Off Peak | | | | | | | |
| 2002 | | | | | | | | | | | | | | | | | | |
| 2003 | 12202 | 3 | 16 | 04:26 | 04:00 | 09:00 | 09:00 | 10:00 | 09:00 | 18 | 8 | 8 | 8 | 8 | 2,462,600 | 70,360 | 52,583 | 310 |
| 2004 | 14617 | 3 | 19 | 03:44 | 04:00 | 07:00 | 07:00 | 09:00 | 07:00 | 18 | 11 | 11 | 8 | 11 | 2,930,795 | 83,737 | 62,580 | 369 |
| 2005 | 17229 | 3 | 22 | 03:13 | 03:00 | 06:00 | 06:00 | 08:00 | 06:00 | 24 | 12 | 12 | 9 | 12 | 3,433,920 | 98,112 | 73,323 | 433 |
| 2006 | 18218 | 3 | 23 | 03:05 | 03:00 | 06:00 | 06:00 | 08:00 | 06:00 | 24 | 12 | 12 | 9 | 12 | 3,433,920 | 98,112 | 73,323 | 433 |
| 2007 | 19206 | 3 | 24 | 02:57 | 03:00 | 06:00 | 06:00 | 07:00 | 06:00 | 24 | 12 | 12 | 11 | 12 | 3,503,080 | 100,088 | 74,799 | 441 |
| 2008 | 20194 | 3 | 26 | 02:43 | 03:00 | 05:00 | 05:00 | 07:00 | 05:00 | 24 | 15 | 15 | 11 | 15 | 3,971,275 | 113,465 | 84,796 | 500 |
| 2009 | 17890 | 3 | 23 | 03:05 | 03:00 | 06:00 | 06:00 | 08:00 | 06:00 | 24 | 12 | 12 | 9 | 12 | 3,433,920 | 98,112 | 73,323 | 433 |
| 2010 | 18780 | 3 | 24 | 02:57 | 03:00 | 06:00 | 06:00 | 07:00 | 06:00 | 24 | 12 | 12 | 11 | 12 | 3,503,080 | 100,088 | 74,799 | 441 |
| 2011 | 19670 | 3 | 25 | 02:50 | 03:00 | 06:00 | 06:00 | 07:00 | 06:00 | 24 | 12 | 12 | 11 | 12 | 3,503,080 | 100,088 | 74,799 | 441 |
| 2012 | 20446 | 3 | 26 | 02:43 | 03:00 | 05:00 | 05:00 | 07:00 | 05:00 | 24 | 15 | 15 | 11 | 15 | 3,971,275 | 113,465 | 84,796 | 500 |
| 2013 | 21221 | 3 | 27 | 02:37 | 03:00 | 05:00 | 05:00 | 07:00 | 05:00 | 24 | 15 | 15 | 11 | 15 | 3,971,275 | 113,465 | 84,796 | 500 |
| 2014 | 21997 | 3 | 28 | 02:32 | 03:00 | 05:00 | 05:00 | 06:00 | 05:00 | 24 | 15 | 15 | 12 | 15 | 4,005,855 | 114,453 | 85,535 | 505 |
| 2015 | 22772 | 3 | 29 | 02:27 | 02:00 | 05:00 | 05:00 | 06:00 | 05:00 | 36 | 15 | 15 | 12 | 15 | 4,630,815 | 132,309 | 98,879 | 584 |
| 2016 | 23548 | 3 | 30 | 02:22 | 02:00 | 05:00 | 05:00 | 06:00 | 05:00 | 36 | 15 | 15 | 12 | 15 | 4,630,815 | 132,309 | 98,879 | 584 |
| 2017 | 24323 | 3 | 31 | 02:17 | 02:00 | 05:00 | 05:00 | 06:00 | 05:00 | 36 | 15 | 15 | 12 | 15 | 4,630,815 | 132,309 | 98,879 | 584 |
| 2018 | 25099 | 3 | 32 | 02:13 | 02:00 | 04:00 | 04:00 | 06:00 | 04:00 | 36 | 18 | 18 | 12 | 18 | 5,099,010 | 145,686 | 108,876 | 643 |
| 2019 | 25874 | 3 | 33 | 02:09 | 02:00 | 04:00 | 04:00 | 05:00 | 04:00 | 36 | 18 | 18 | 15 | 18 | 5,202,750 | 148,650 | 111,091 | 656 |
| 2020 | 26650 | 3 | 34 | 02:05 | 02:00 | 04:00 | 04:00 | 05:00 | 04:00 | 36 | 18 | 18 | 15 | 18 | 5,202,750 | 148,650 | 111,091 | 656 |
| 2021 | 27425 | 3 | 35 | 02:01 | 02:00 | 04:00 | 04:00 | 05:00 | 04:00 | 36 | 18 | 18 | 15 | 18 | 5,202,750 | 148,650 | 111,091 | 656 |
| 2022 | 27813 | 3 | 35 | 02:01 | 02:00 | 04:00 | 04:00 | 05:00 | 04:00 | 36 | 18 | 18 | 15 | 18 | 5,202,750 | 148,650 | 111,091 | 656 |
| 2023 | 28201 | 6 | 18 | 03:56 | 04:00 | 08:00 | 08:00 | 10:00 | 08:00 | 18 | 9 | 9 | 8 | 9 | 5,237,330 | 74,819 | 111,830 | 660 |
| 2024 | 28558 | 6 | 18 | 03:56 | 04:00 | 08:00 | 08:00 | 10:00 | 08:00 | 18 | 9 | 9 | 8 | 9 | 5,237,330 | 74,819 | 111,830 | 660 |
| 2025 | 28976 | 6 | 18 | 03:56 | 04:00 | 08:00 | 08:00 | 10:00 | 08:00 | 18 | 9 | 9 | 8 | 9 | 5,237,330 | 74,819 | 111,830 | 660 |
| 2026 | 29364 | 6 | 19 | 03:44 | 04:00 | 07:00 | 07:00 | 09:00 | 07:00 | 18 | 11 | 11 | 8 | 11 | 5,861,590 | 83,737 | 125,159 | 739 |
| 2027 | 29752 | 6 | 19 | 03:44 | 04:00 | 07:00 | 07:00 | 09:00 | 07:00 | 18 | 11 | 11 | 8 | 11 | 5,861,590 | 83,737 | 125,159 | 739 |

Total 3-car trains required **40**
Km per 3-car train per year **109,362**

25 year total **109,361,700** **2,732,689** **2,335,137** **5,030,315**

| Headway Factors | |
|-----------------|-----|
| Off Peak | 0.5 |
| Sats | 0.5 |
| PHs | 0.5 |
| Suns | 0.4 |

Assumptions

- 3-car train capacity : 950 pass
- 6-car train capacity: 1900 pass
- Length of line: 19.67 km
- Non revenue km: 5 %
- Commercial speed: 35 kph
- Spare trains: 10 % of trains running in the system
- Energy consumption: **420** kWh/3-car train/single trip
- Minimum headway: 2 min

| Hours/Year | |
|------------|------|
| Peak | 1488 |
| Off Peak | 3224 |
| Sats | 988 |
| PHs | 247 |
| Suns | 988 |

Calculated and run, for his own personal and educational evaluation purposes, by Apigeat Tom Saunkratoke, B.S.M.E. (Hons) (Norwich), M.S.M.E. (Georgia Tech)
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