

Memorandum

February 7, 2022

To: Paul Blais, MDB Insight

From: Tom McCormack, *metroeconomics*

Subject: South Bruce and Area Growth Expectations – Amended April 29, 2022

MDB Insight retained *metroeconomics* to assess the potential for economic and demographic growth over the period from 2022 to 2046 of South Bruce and of the four municipalities surrounding it. MDB indicated an assessment of the area's potential both as a result of normal growth and as a result of the planning, construction and operation of the APM DGR project (the project) were required.

This memo summarizes the procedure followed by *metroeconomics* to develop the required assessments and summarizes the impact results.

The impact assessment:

- Is based on data provided by NWMO regarding the number of people who will be working in South Bruce from 2028 to 2046 planning, building and operating the project;
- makes use of Statistics Canada economic multipliers to assess the total direct, indirect and induced impacts of the project; and
- makes use of *metroeconomics'* sub-provincial economic and demographic model to develop a Base Case and an Impact Case in order to assess the potential impacts of the project on South Bruce and its neighbouring municipalities.

Overall Impact of the Project

The standard procedure for assessing the impacts of a project of this nature involves the use of Statistics Canada Input-Output Multipliers.¹ The employment profile provided by NWMO was used in conjunction with relevant multipliers to create estimates of:

- the total GDP and labour income likely to be generated **directly** as a result of the employment of people in South Bruce planning, building and operating the APM DGR project starting in 2028 and extending through to 2046;

¹ The multipliers are provided by province and by detailed industry and are updated regularly (the latest available are for 2018; they change only slightly from year to year).

- the total GDP, labour income and number of jobs likely to be generated *indirectly* as a result of the purchases from other organizations by NWMO and by the construction companies of goods and services as inputs to their activities from 2028 to 2046;
- the total GDP, labour income and number of jobs likely to be *induced* by the spending by the *direct* and *indirect* job holders of their wages and salaries on household goods and services in the communities in which they reside.

The impacts so derived account for all the GDP, labour income and jobs stemming from planning, building and operating the project from 2028 to 2046.

The data provided by NWMO indicate the following:

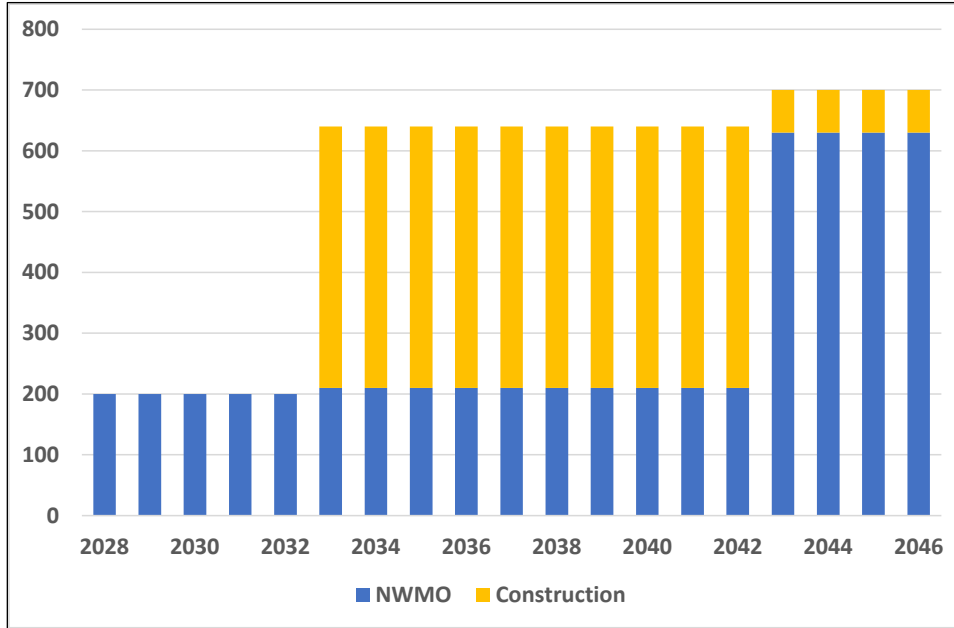
- 200 NWMO staff will be employed at the site in South Bruce each year from 2028 to 2032 planning the project;
- 210 NWMO staff will be employed at the site each year from 2033 to 2042 during the construction phase of the project;
- 430 construction workers will be employed at the site each year from 2033 to 2042 during the construction phase of the project;
- 630 NWMO staff will be employed at the site each year from 2043 onwards during the operations phase of the project;
- 70 maintenance trade workers will be employed at the site from 2043 onwards during the operations phase of the project.

Exhibit 1 illustrates the number of people working directly at the site in South Bruce each year over the 2028 to 2046 period. The blue portion of the bars represents NWMO workers and the gold portion represents construction workers.

The data in Exhibit 1 were used in connection with StatCan's multipliers to estimate the direct, indirect and induced impacts on the GDP, labour income and jobs stemming from the project. Exhibit 2 summarizes the impacts of the project for the year 2043, the first year the project will be fully operational. While direct, indirect and induced impacts occur each year over the entire span from 2028 to 2046 only the 2043 estimates are provided in Exhibit 1 as they reflect the long-term annual impacts that can be expected carrying forward from 2043.

As of 2043 the total impacts of the project – direct, indirect and induced – will reach an estimated \$300.0 million annually in Gross Domestic Product, \$127.9 million in labour income and 1,801 person years of employment. Exhibit 2 breaks down these total impacts into their direct, indirect and induced portions.

Exhibit 1
The APM-DGR Site in South Bruce
Total Number of NWMO and Construction Workers
Annual Data 2028 to 2046



Source: NWMO

Exhibit 2
The APM-DGR Site in South Bruce
Direct, Indirect and Induced Impacts Annually in 2043 and Beyond

| | Direct | Indirect | Induced | Total |
|----------------------------|--------------|-------------|-------------|--------------|
| GDP (\$m) | 192.2 | 62.6 | 45.3 | 300.0 |
| Labour income (\$m) | 73.0 | 36.3 | 18.6 | 127.9 |
| Jobs (person years) | 700 | 590 | 511 | 1,801 |

Source: Estimated by *metroeconomics*

Exhibit 2 indicates the 700 **direct** jobs in South Bruce in 2043 and beyond will result in 590 jobs **indirectly** among the suppliers of goods and services to NWMO and another 511 jobs will be **induced** as the 700 direct and 590 indirect job holders spend their incomes on goods and services in the communities in which they reside.

The next section estimates the impacts of the project on South Bruce and its neighbouring communities by considering where the job-holders will work and where they might reside.

Impacts of the Project on the South Bruce Area

An assessment of the potential impacts of the project on South Bruce itself and on each of its neighbouring communities was carried out by *metroeconomics* using the economic and demographic projection framework *metroeconomics* developed for that purpose to develop a Base Case and an Impact Case. In developing the impacts it was assumed the municipalities most likely to be impacted by the APM DGR project include (2021 population in brackets):

- South Bruce (6,250)
- Huron-Kinloss (7,860)
- Brockton (10,130)
- North Huron (5,150)
- Morris-Turnberry (3,940)

Collectively the five are referred to here as the Core Area. The total population of the Core Area in 2021 was 33,330, up by 1,670 from 31,660 in 2001. The population of the Core Area grew by just 0.3 percent per year over the last two decades compared to Ontario's annual pace of 1.1 percent over that span.

Assessing the impacts of the project on the Core Area began with the development of a Base Case projection for each municipality using the above-noted sub-provincial projection framework. This framework ties the future population growth of an area to (a) its potential for growing jobs in its economic base industries, and (b) to its potential for supplying enough people locally to fill the jobs that will be created. The framework does this by linking an economic model by industry of the area to an age cohort model of the area. If the age cohort model indicates there will not be enough people locally to meet the area's labour market needs it generates enough in-migrants to do so. In effect each new economic base job increases the population. The population gain, in turn, increases the need for community base workers (those serving the local population). The community base worker gain, in turn, increases the need for more workers. Each new job (economic base and community base) increases the population by two (since each new worker on average brings along one dependent).

An important aside: There is a heavy presence of Baby Boomers in every community throughout Canada including in the Core Area. The Boomers are currently between the ages of 55 and 74 and most of them who work will retire between now and the mid-2030s. Canada does not have enough home grown people to replace them as they retire because they did not replace themselves as they aged into their household formation years in the 1970s and 1980s (the total fertility rate has hovered around 1.5 since the mid-1960s, well below the replacement rate of 2.1). To backfill the gap the federal government has been gradually increasing the number of immigrants allowed to settle in Canada each year for the last two decades and it will continue to increase the number each year through to the mid-2030s until replacing retiring Boomers is no longer an issue. This need will increase the underlying rate of population growth throughout Canada from now through to the mid-2030s after which the underlying rate will slow down. The projection framework used here captures this phenomenon at the sub-provincial level.

This framework was used to project the population, dwellings, employment and GDP of each of the five municipalities in the Core Area separately between now and 2046 assuming the APM DGR project *does not locate* in South Bruce. This projection is referred to as the **Base Case**.

The framework was also used to project the population, dwellings, employment and GDP of each of the five between now and 2046 assuming the APM DGR project *does locate* in South Bruce. This alternative projection is referred to as the **Impact Case**.

To understand the Impact Case alternative it is important to keep in mind that where jobs are provided by employers often differs from where job occupants choose to live. The economic impacts will be greatest in those communities in which the jobs are located. The demographic impacts (in the form of people, dwellings and commercial and institutional space) will be greatest in those communities in which the job occupants choose to live.

To generate the Impact Case the following assumptions were made:

- The 700 **direct** jobs created by the project (those in the first column of Exhibit 2) will all be located in South Bruce. Thus the direct GDP and direct labour income stemming from those jobs will also all be generated in South Bruce.
- Only a portion of the 590 **indirect** jobs (those in the second column of Exhibit 2) – those created at firms supplying goods and services to the project – are likely to locate within the Core Area. For the purposes of this assessment it was assumed one third (rounded to 200) would locate in the Core Area and the remaining two thirds (390) would locate outside the Core Area in communities where the products and expertise are located (Toronto, Montreal, Chicago, etc.). It was further assumed the 200 jobs that locate in the Core Area will be distributed in line with the current municipal distribution of jobs within the Core Area. On that basis the 200 jobs are assumed to locate as follows: 70 to Brockton, 45 to North Huron, 35 to Huron-Kinloss, 30 to South Bruce and 20 to Morris-Turnberry.
- The 511 jobs **induced** by the project (the final column of Exhibit 2) will locate in the communities in which the direct and indirect job holders ultimately reside. The 700 direct jobs plus the 590 indirect jobs (total 1,290) induce a total of 511 jobs according to Exhibit 2, implying each direct and indirect job induces 0.39 jobs ($0.39 = (511/1,290)$). Since it was assumed all 700 of the direct jobs but only 200 of the indirect jobs would locate in the Core it can be expected about 350 of the 511 induced jobs will locate there (that is $0.39 \times (700+200)$) with the remaining locating outside the Core Area.

The total number of jobs expected to be catalyzed by the project within the Core Area – 700 directly and 200 indirectly – will give rise to at least 1,800 new residents in the Area by 2043 (two new residents for each new job). (That the number could ultimately exceed 1,800 is explained on page 7.)

The 1,800 new residents were allocated to the five municipalities within the Core Area as follows:

- The 700 direct jobs will generate 1,400 new residents. It was assumed 700 of these new residents will locate in South Bruce and the other 700 will locate within the rest of the Core Area, the latter in line with the current distribution of people in the rest of the Core Area.
- The 200 induced jobs will generate an additional 400 new residents. It was assumed the 400 new residents would distribute themselves within the Core Area in line with the current distribution of the population across the five municipalities in the Core Area.

Accounting for both of these impacts the additional population of 1,800 was distributed as follows: 780 to South Bruce, 390 to Brockton, 290 to Huron-Kinloss, 190 to North Huron and 150 to Morris-Turnberry.

Exhibit 3 compares the results of the Impact Case and the Base Case as determined using the sub-provincial framework:

- The first section of Exhibit 3 provides the projected values of the population, dwellings, employment by place-of-work (POW) and GDP of the Base Case for each of the five municipalities for each of the selected years 2021, 2031, 2041 and 2046. The Base Case projects the total population of the five will reach 46,390 people.
- The second section provides the same information for the Impact Case. The Impact Case projects the total population of the five will reach 48,190 people.
- The third section compares the impacts for each variable, location and year by showing the Impact Case projected values minus the Base Case projected values. It indicates the Impact Case total population in 2046 will exceed that of the Base Case by 1,800.
- The next section calculates the impacts of the third section as a percentage of the Base Case values. It indicates the area's total population in 2046 in the Impact Case will exceed that of the Base Case by 3.9 percent.
- The final two columns compare the projected growth by variable by municipality between 2021 and 2046 according to the Base Case to the projected growth by variable by municipality over that span according to the Impact Case.

The population projections for each area are developed on an age and gender basis. The dwelling projections for each area are developed by applying dwelling propensities by age of household head by structural type as they were in 2016 to the projected future population by age. The people moving into the area will be relatively young and therefore mostly in their household formation years. As a result the number of new residents per new household will average around 3 persons per unit. For the Core Area as a whole the 1,800 gain in population, therefore, implies 600 new dwellings will be required.

The employment section of Exhibit 3 indicates the total number of jobs in the Core Area in 2046 will be greater by 1,260 that year than in the Base Case. The 1,260 total includes the 700 direct jobs estimated in Exhibit 2 all of which are located in the Core Area, plus the 200 indirect jobs assumed to locate within the Core Area, plus 360 induced jobs estimated by the sub-provincial system. Note that the 360 estimate here for induced jobs closely matches the 350 estimate based on the multiplier procedure (see the third bullet on page 5).

It is conceivable the 360 induced jobs, in turn, could lead to an additional increase in the total population of the Core Area beyond the 1,800 assumed here. The multiplier procedure does not include assessing the impacts on the population. Given that assuming 1,800 new residents in the sub-provincial framework gives rise to an estimate of induced jobs consistent with the induced jobs estimate based on the multipliers-based procedure it was felt consideration of an additional round of impacts was not required.

The impacts provided in Exhibit 3 at the end of this report are intended to be representative of the type of impacts that could occur in the Core Area by municipality if the project is located in South Bruce. Different allocations of jobs and/or people within the Core Area are possible.

Whatever allocations are assumed the conclusion will be that locating the APM DGR project in South Bruce not only benefits South Bruce but also benefits South Bruce’s neighbouring communities.

Comparison to Bruce County and Huron County Projections

The question has been raised as to why *metroeconomics*’ Base Case projections for population growth in the five municipalities in the Core Area are so much greater than the Bruce County and Huron County projections for the five? The table below compares the 2021 to 2046 Base Case population gains projected above for the five to the gains projected by each County². The Base Case indicates a total gain for the five over the next 25 years of 13,060 while the Counties indicate a total gain of 7,290.

| Municipality | Projected 21-46 | | |
|----------------------|-----------------|-----------------|--------------|
| | Counties | metro-economics | Difference |
| South Bruce | 1,400 | 2,510 | 1,110 |
| Huron-Kinloss | 2,600 | 3,180 | 580 |
| Brockton | 3,200 | 3,880 | 680 |
| North Huron | 50 | 1,860 | 1,810 |
| Morris-Turnberry | 40 | 1,630 | 1,590 |
| Core Area 5 | 7,290 | 13,060 | 5,770 |
| Bruce + Huron County | 20,700 | 26,740 | 6,040 |
| Bruce County | 20,100 | 19,750 | -350 |
| Huron County | 600 | 6,990 | 6,390 |

² The Huron County projections extend only to 2041. To be consistent with the projection horizon adopted throughout this report *metroeconomics* extended them to 2046 assuming the 2036 to 2041 gain projected by the County would prevail between 2041 and 2046.

The key reasons for the differences are explained below:

- As noted on Page 4, Canada does not have enough home grown people to replace the working Baby Boomers as they retire because they did not replace themselves as they aged into their household formation years in the 1970s and 1980s. The need to replace retiring Boomers will increase the underlying rate of population growth throughout Canada from now through to the mid-2030s after which the underlying rate will slow. The projection framework used here to generate the Base Case projections for the five municipalities captures this phenomenon.
- *metroeconomics* maintains a detailed projection data base for all of Canada and each of its almost 300 counties and more than 5,000 municipalities. The projections in that file – referenced here as *metroeconomics'* base case projections with base case not capitalized to differentiate them from the customized Base Case projections developed for this assignment – are created based on a less detailed procedure than the customized Base Case projections developed for this assignment.
- The red values in the table above for the total populations of Bruce County and Huron County in 2046 are drawn from *metroeconomics'* November 2021 base case projection (projections based on the less detailed procedure used to generate the Core Area projections here). The red values are included to indicate that – even before being approached to carry out this assignment – *metroeconomics* was projecting Bruce County as a whole will grow between 2021 and 2046 by 19,750 or by an amount about equal to the gain of 20,100 Bruce County is projecting for the County as a whole; and *metroeconomics* was projecting Huron County will grow by considerably more (6,990) than Huron County is projecting (600).

It should also be noted *metroeconomics'* Base Case projections developed for this note for each of South Bruce, Huron-Kinloss and Brockton exceed the growth projected for each by Bruce County.

If the more detailed approach used to develop the Base Case and Impact Case projections here was to be applied to the remaining Bruce County and Huron County municipalities it is likely the projected gains for the two would exceed our projected total gains of 19,750 and 6,990 respectively in the table above.

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Exhibit 3
The APM-DGR Site in South Bruce
Population, Employment, Dwellings and GDP Impacts
Core Area by Municipality
2021, 2031, 2041 and 2046

| | Base Case | | | | Impact Case | | | | Impact Minus Base | | | | Percentage Impact | | | | Change 21-46 | |
|--------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|-------------------|------------|--------------|--------------|-------------------|------------|-------------|-------------|---------------|---------------|
| | 2021 | 2031 | 2041 | 2046 | 2021 | 2031 | 2041 | 2046 | 2021 | 2031 | 2041 | 2046 | 2021 | 2031 | 2041 | 2046 | Base | Impact |
| Population | 33,330 | 39,450 | 44,520 | 46,390 | 33,330 | 39,850 | 45,800 | 48,190 | 0 | 400 | 1,280 | 1,800 | 0.0 | 1.0 | 2.9 | 3.9 | 13,060 | 14,860 |
| South Bruce | 6,250 | 7,420 | 8,400 | 8,760 | 6,250 | 7,620 | 9,040 | 9,540 | 0 | 200 | 640 | 780 | 0.0 | 2.7 | 7.6 | 8.9 | 2,510 | 3,290 |
| Huron-Kinloss | 7,860 | 9,340 | 10,570 | 11,040 | 7,860 | 9,400 | 10,760 | 11,330 | 0 | 60 | 190 | 290 | 0.0 | 0.6 | 1.8 | 2.6 | 3,180 | 3,470 |
| Brockton | 10,130 | 11,960 | 13,460 | 14,010 | 10,130 | 12,030 | 13,700 | 14,400 | 0 | 70 | 240 | 390 | 0.0 | 0.6 | 1.8 | 2.8 | 3,880 | 4,270 |
| North Huron | 5,150 | 6,040 | 6,760 | 7,010 | 5,150 | 6,080 | 6,880 | 7,200 | 0 | 40 | 120 | 190 | 0.0 | 0.7 | 1.8 | 2.7 | 1,860 | 2,050 |
| Morris-Turnberry | 3,940 | 4,690 | 5,330 | 5,570 | 3,940 | 4,720 | 5,420 | 5,720 | 0 | 30 | 90 | 150 | 0.0 | 0.6 | 1.7 | 2.7 | 1,630 | 1,780 |
| Dwellings | 13,030 | 15,300 | 17,040 | 17,640 | 13,030 | 15,440 | 17,460 | 18,240 | 0 | 140 | 420 | 600 | 0.0 | 0.9 | 2.5 | 3.4 | 4,610 | 5,210 |
| South Bruce | 2,360 | 2,850 | 3,200 | 3,300 | 2,360 | 2,920 | 3,400 | 3,550 | 0 | 70 | 200 | 250 | 0.0 | 2.5 | 6.3 | 7.6 | 940 | 1,190 |
| Huron-Kinloss | 3,050 | 3,540 | 3,940 | 4,080 | 3,050 | 3,560 | 4,000 | 4,170 | 0 | 20 | 60 | 90 | 0.0 | 0.6 | 1.5 | 2.2 | 1,030 | 1,120 |
| Brockton | 4,130 | 4,830 | 5,400 | 5,620 | 4,130 | 4,860 | 5,490 | 5,760 | 0 | 30 | 90 | 140 | 0.0 | 0.6 | 1.7 | 2.5 | 1,490 | 1,630 |
| North Huron | 2,160 | 2,560 | 2,840 | 2,950 | 2,160 | 2,570 | 2,880 | 3,020 | 0 | 10 | 40 | 70 | 0.0 | 0.4 | 1.4 | 2.4 | 790 | 860 |
| Morris-Turnberry | 1,330 | 1,520 | 1,660 | 1,690 | 1,330 | 1,530 | 1,690 | 1,740 | 0 | 10 | 30 | 50 | 0.0 | 0.7 | 1.8 | 3.0 | 360 | 410 |
| Employment POW | 10,830 | 12,080 | 13,540 | 14,270 | 10,830 | 12,350 | 14,440 | 15,530 | 0 | 270 | 900 | 1,260 | 0.0 | 2.2 | 6.6 | 8.8 | 3,440 | 4,700 |
| South Bruce | 1,570 | 1,730 | 1,880 | 1,950 | 1,570 | 1,960 | 2,610 | 2,790 | 0 | 230 | 730 | 840 | 0.0 | 13.3 | 38.8 | 43.1 | 380 | 1,220 |
| Huron-Kinloss | 1,860 | 2,040 | 2,290 | 2,410 | 1,860 | 2,050 | 2,320 | 2,490 | 0 | 10 | 30 | 80 | 0.0 | 0.5 | 1.3 | 3.3 | 550 | 630 |
| Brockton | 3,870 | 4,380 | 4,970 | 5,270 | 3,870 | 4,400 | 5,050 | 5,470 | 0 | 20 | 80 | 200 | 0.0 | 0.5 | 1.6 | 3.8 | 1,400 | 1,600 |
| North Huron | 2,520 | 2,800 | 3,160 | 3,350 | 2,520 | 2,810 | 3,210 | 3,450 | 0 | 10 | 50 | 100 | 0.0 | 0.4 | 1.6 | 3.0 | 830 | 930 |
| Morris-Turnberry | 1,010 | 1,130 | 1,240 | 1,290 | 1,010 | 1,130 | 1,250 | 1,330 | 0 | 0 | 10 | 40 | 0.0 | 0.0 | 0.8 | 3.1 | 280 | 320 |
| GDP (\$ millions) | 1,230 | 1,590 | 2,010 | 2,270 | 1,230 | 1,660 | 2,270 | 2,660 | 0 | 70 | 260 | 390 | 0.0 | 4.4 | 12.9 | 17.2 | 1,040 | 1,430 |
| South Bruce | 190 | 250 | 320 | 360 | 190 | 310 | 540 | 680 | 0 | 60 | 220 | 320 | 0.0 | 24.0 | 68.8 | 88.9 | 170 | 490 |
| Huron-Kinloss | 210 | 270 | 350 | 400 | 210 | 280 | 360 | 410 | 0 | 10 | 10 | 10 | 0.0 | 3.7 | 2.9 | 2.5 | 190 | 200 |
| Brockton | 440 | 570 | 710 | 800 | 440 | 570 | 720 | 830 | 0 | 0 | 10 | 30 | 0.0 | 0.0 | 1.4 | 3.8 | 360 | 390 |
| North Huron | 270 | 340 | 420 | 470 | 270 | 340 | 430 | 490 | 0 | 0 | 10 | 20 | 0.0 | 0.0 | 2.4 | 4.3 | 200 | 220 |
| Morris-Turnberry | 120 | 160 | 210 | 240 | 120 | 160 | 220 | 250 | 0 | 0 | 10 | 10 | 0.0 | 0.0 | 4.8 | 4.2 | 120 | 130 |

Source: Estimated by *metroeconomics*