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Solar energy: financial advantages of their use

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Abstract

The objective of the research is to analyze the context of use, exploitation, investment and economic deduction of renewable energy, specifically, photovoltaic solar energy. In Mexico, there is a legal framework that distinguishes the use and exploitation of renewable energy, which provides guidelines for a series of support programs that encourage individuals and companies to use non-polluting energy. The methodology used in this work was documentary and case study; which allowed to systematize and analyze the information obtained through a monthly monitoring guide. The result obtained reflects that the economic investment made by a company to save electric energy, through a photovoltaic system, has as a consequence a contribution to the environment with the reduction of the carbon footprint, as well as the economic savings to short, medium and long term of the company and even the deduction before the Tax Administration System.

Keywords

Financial advantage, Solar energy, renewable energy.

Introduction

The recognition of the greenhouse effect, the gas emission an its dynamics, is an international issue. The carbon footprint is an international recognized indicator to understand its dynamics since, it allows to identifying routes to control, reduce or mitigate these emissions and their impact. The carbon footprint is defined as the amount of emission of effect gasses relevant to the climate change, derivate of the activities of production or consumption of good and services of human beings, and covers from the direct CO_2 emissions to more complex ones, associated to the complete life cycle of greenhouse gas emissions, including from the raw materials to the final destination of the product and its packaging (Schneider & Samaniego, 2010). The carbon footprint measure refers to the amount in tons or kilos of carbon dioxide equivalent of greenhouse gases, produced on a daily basis, and generated from the burning of fossil fuels for the production of energy, heating and transport among other processes (Wiedmann & Minx, 2007). The assessment of greenhouse gas emissions associated with products is complex. In accounting models in use, the emissions account is assigned only to those who generate carbon in the production process and in transportation, however, there is also responsibility for consumers (Schneider & Samaniego, 2010).

Although there is a great diversity of ecosystems in Mexico, many of them are energy sources, and their current use or management has an unfavorable impact on the environment. This has motivated the search for new forms of energy called "renewable energy" that represent a way of responsible and sustainable use for its renewal and / or balance. This work provides an analysis of the advantages of the use and disposal of photovoltaic solar energy from a case study, seen from the administrative and fiscal discipline.

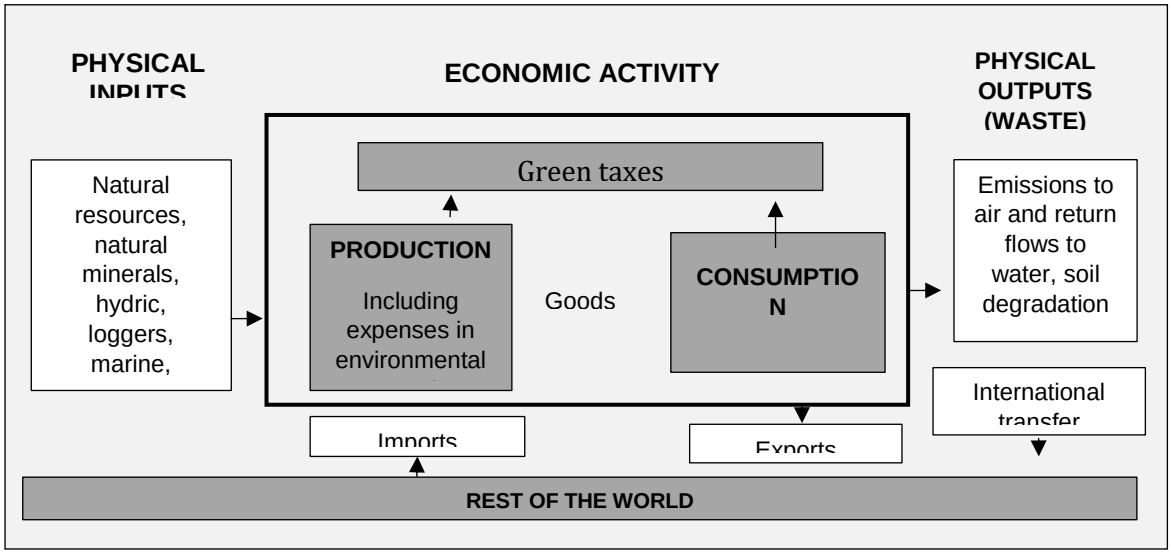
This document is developed in four sections, the first is the conceptual framework, the second develops the investment and the support that the Mexican state has promoted for renewable energy, specifically photovoltaic solar energy. The third section describes a case analysis of the company RAK in the period from September-2017 to August-2018, highlighting the benefits of the use and exploitation of photovoltaic solar energy in the social, environmental, economic and tax field. The last section concludes the benefits of its implementation.

Conceptual framework

The carbon footprint is part of the set of sub-footprints of the ecological footprint proposed by Rees & Wackernagel (1996) who defined the latter as an accounting planning tool to measure ecological sustainability, by estimating the magnitude of human consumption that exceeds to the regeneration capacity of the biosphere. They consider that the consumption of resources for production and the generation of the waste after this process to maintain the consumption levels can have a final balance, both positive and negative. The ecological footprint is made up of other sub-footprints, the most significant being the carbon footprint due to its direct impact on climate change (World Wildlife Fund [WWF], 2008).

The productive equation makes use of the natural capital or the natural assets that are of producing a sustainable flow (Isa et al., 2005) in its three forms: natural resources, landfills and environmental services. The measurement is made in three main areas: a) physical flows of materials and energy into the economy and its exchanges with the environment; b) the stock of environmental assets and its variations; and c) economic activities and transactions related to the environment.

Figure 1 Physical flows of natural resources, products and waste.



Note: Adaptation from INTOSAI Working Group on Environmental Auditing (2010) and United Nations et al. (2016).

Figure 1 shows natural resources enter the economy as inputs, to become goods and services, they are made up of forests, jungles, mineral deposits, fertile plantations and soils, inland hydrological assets, oceans and fishing in seas, as well as deposits deep anthropocentric among others. The products or waste can be in the form of a landfill where they fulfill the function of absorption and dilution of unwanted contaminants, such as the exhaustion of gases from combustion or chemical processes, the water used to clean products or people, which are generated by production and consumption. Likewise, environmental services are produced by ecosystems and include biotic and material cycles, providing the habitat for all living things on earth, including humans. All these forms make up the ecological footprint sub-footprints, however, the carbon sub-footprint has been the most significant due to its direct impact on climate change, whose participation in the ecological footprint has reached almost 50% in recent years (World Wildlife Fund [WWF], 2008).

The photovoltaic system

It is a system that is made up of several elements that jointly take advantage of the daylight, transforming it into electrical energy (Arencibia-Carballo, 2016). The initial component is the photovoltaic cell that captures the energy and transmits it to an inverter that transforms the energy into alternating current to transmit it to the electrical system to which it is connected. The amount of energy that is transmitted to the electrical system depends on the number of solar panels. It also depends on the quality of sunlight - the weather and the time during the day -, the orientation, the inclination, the radiation and the nominal power of the panels (Energía Solar, 2019).

The photovoltaic system is connected to a consumption network system of the home or business through a contract with the Federal Electricity Commission (CFE), the national company responsible for electricity supply, to exchange the conventional electricity consumption meter for one "bi-directional" counting (Comisión Federal de Electricidad [CFE], 2018). The surplus of solar energy that is not consumed during the day is considered a contribution to the CFE network, which will supply electricity at night. To determine the number of solar cells, the monthly average consumption, the inverter capacity and the quality of the installation are considered for the return on investment.

Investment and supports

Legal framework

The carbon footprint is measured in terms of tons of carbon dioxide equivalent (tCO_2e) and follows the Kyoto Protocol, signed in 1997, which was created to reduce greenhouse gas (GHG) emissions that cause global warming. At the eighteenth Conference of the Parties on climate change (COP18) a second period of validity until December 2020 was ratified. This protocol establishes a standard method for accounting for GHG emissions. It categorizes emissions into three scopes: direct emissions resulting from activities under the organization's control; indirect emissions from the use of electricity, heat or steam and other indirect emissions. An alternative method to the GHG protocol is ISO 14064 standards.

The United Nations Framework Convention on Climate Change was signed by the Government of Mexico in 1992 and ratified in 1993 and 2000. Mexico has fifth place worldwide in the development of CDM (Clean Development Mechanism) projects in the areas recovery of methane, renewable energy, energy efficiency, industrial processes and waste management, among others.

The Mexican Standards (NMX) are technical regulations issued by the Ministry of Economy. NMXs are prepared by the Ministry of the Environment and Natural Resources (SEMARNAT), and the National Water Commission (CNA). They are approved by the Technical Committee for National Normalization of the Environment and Natural Resources (COTEMARNAT), correspond to the "environmental protection" sector and are identified as "AA" (SEMARNAT, 2020). The current NMX of the environmental sector are classified as: water, atmosphere, promotion and environmental quality, water purification, protection of flora and fauna, waste, noise and soil. The National System of Environmental Information and Natural Resources (SNIARN) is published on the WEB and contains statistical databases (BADESNIARN), cartographic or geographic digital space (ESDIG), and also feeds the national system of environmental indicators (SNIA). The General Law on Climate Change (LGCC) published in 2012 establishes the creation of the National Emissions Registry (RENE) and the regulation to compile the information on the emission of Compounds and Greenhouse Gases (CyGEI) of the productive sectors (Secretaría de Medio Ambiente y Recursos Naturales [SEMARNAT], 2020).

The productive sectors that are required to report when their emissions exceed 25,000 tCO_2e (tons of CO_2 equivalent) are energy, manufacturing, transport, agriculture, waste, and commerce and services. The greenhouse gases or compounds to report are: carbon dioxide, methane, nitrous oxide, black carbon or soot, fluorinated gases, sulfur hexafloride, nitrogen trifluoride, halogenated ethers, halocarbons, mixtures of these gases and other gases identified by the IPCC and designated by SEMARNAT. Furthermore, SEMARNAT publishes a list of accredited bodies for the Certification of Greenhouse Gas Emissions.

The Law for the Use of Renewable Energies and the Financing of the Energy Transition (LAERFTE), today the Law of Energy Transition (LTE), in its article 27 promotes the creation of the Fund for the Energy Transition and the Sustainable Use of Energy (FOTEASE) for the energy transition and the sustainable use of energy in its different stages (Secretaría de Energía, 2020). Article 18 supports the installation of photovoltaic systems as an electricity project produced with surplus renewable energy from self-supply projects. Likewise, article 36 allows the production cost in a self-consumption network to be zero in the long term. Article 48 refers to the funds destined to the Energy Transition and Sustainable Use. These funds are presented by SENER, SHCP, SAGARPA, SEMARNAT, CFE, IMP, INEEL, CONACYT, CONUEE, as non-recoverable resources (Secretaría de Energía, 2020).

The Electric Energy Savings Trust (FIDE) promotes the efficient use of electric energy and the generation of renewable energies, through trustees such as CONCAMIN, CANACINTRA, CANAME, CMIC, CNEC and SUTERM. FIDE also offers technical and financial support, energy efficiency and credits for the business sector, among other functions (FIDE, 2020).

The Income Tax Law (Instituto Mexicano de Contadores Públicos [IMPC], 2016), in its article 34 determines the authorized deduction percentages according to investments, in its section XIII (Instituto

Mexicano de Contadores Públicos [IMPC], 2016), referring to the photovoltaic system as renewable source, as long as it has been working for at least 5 years.

The organizations involved in ISO standards and certifications of "corporate social responsibility" have registered with organizations such as, Alliance for Corporate Social Responsibility in Mexico (AliaRSE). Likewise, the Mexican Center for Philanthropy (Cemefi) has established agreements to replicate the Social Responsibility Program locally such as UniRSE Jalisco, the Sinaloa Eco-Region Foundation and the Sonoran Entrepreneurship Foundation -FESAC (CNEC, 2020). This Center has 69 accredited consultants to certify the referenced ISO standards and the calculation of the carbon footprint.

As part of a pilot program in Mexico's low-carbon states, the Carbon Trust created with joint funds from the UK government's Office of Foreign and Commonwealth Affairs to provide ongoing structured assistance to the Jalisco and Tabasco state governments on carbon management in 2014/15 (Carbon Trust Standard, 2020), in terms of transfer of experience, methodologies and tools on UK public sector carbon management programs tailored to the region.

Case study

The company “RAK” is the object of study, this case is analyzed from September-2017 to August 2018. The cost of spending on electrical energy was high. It was considered that a photovoltaic system would take advantage of 99% of the energy consumed. Table 1 shows the monthly consumption for the period, the cost of KWh, the payment to CFE and the increase in the price of the KWh. The consumption in KWh changes every month, due to the instability or variability of the ambient temperature, it is also seasonal, since the person in charge of monitoring the energy consumption of the company described that in the hottest months there is a higher consumption of electrical energy, due to intense demand for cooling and air conditioning equipment.

Table 1 Consumption statistics and billing of the company correspondent to the last 12 months.

Company:			**RAK**						
Start			**End**		**Demand (KW)**	**KWh**	**Payment to CFE**	**KWh cost**	**Price increase**
August	2018	-----	September	2018	97	39480	$ 149,699.88	$ 3.59	84.60%
July	2018	-----	August	2018	114	41580	$ 133,440.86	$ 3.21	65.06%
June	2018	-----	July	2018	122	43960	$ 125,852.20	$ 2.86	47.25%
May	2018	-----	June	2018	121	43120	$ 112,433.16	$ 2.61	34.11%
Aphril	2018	-----	May	2018	122	42700	$ 96,002.92	$ 2.25	15.64%
March	2018	-----	Aphril	2018	122	40600	$ 98,045.08	$ 2.41	24.21%

February	2018	-----	March	2018	115	39900	$ 82,316.09	$ 2.06	6.11%
January	2018	-----	February	2018	110	33040	$ 64,315.53	$ 1.95	0.12%
December	2017	-----	January	2018	84	28980	$ 51,887.53	$ 1.79	-7.91%
November	2017	-----	December	2017	104	37100	$ 67,665.50	$ 1.82	-6.19%
October	2017	-----	November	2017	105	37520	$ 79,738.85	$ 2.13	9.31%
September	2017	-----	October	2017	108	40180	$ 78,121.01	$ 1.94	

Note. Made with the billings provided by the company.

The months of September 2017 and August 2018 have similar consumption, however, there is an increase in cost of 84.6%, which motivated the investment in a photovoltaic energy system. The annual average consumption of 39,013.36 Kw/h is obtained from Table 1, and it is the quantity that is considered as the production pattern of the photovoltaic system. Taking the latest consumption data, there is a surplus of 466.64 KWh over the average consumption that CFE will have to bill. This surplus is multiplied by the cost of the last reported month of KWh, $ 3.59, generating a new CFE billing cost in the amount of $ 1,674.84, which is assumed to be fixed for the following years as shown in table 2.

Table 2. Average consumption calculation, new billing and surplus available.

Annual average consumption	KWh Surplus	New CFE billing	Available surplus
KWh 39013.36	**466.64**	**$ 1,674.84**	**$ 140,025.04**

Note. Made with information from table 1.

Taking the cost of September 2018, and subtracting the cost of the new supply, there will be a surplus available for payment of the financing of the photovoltaic system for $ 140,025.04, which will be the maximum limit for payment of amortization of the financing. This is so that the company does not have additional disbursements, protecting the rates of the invoices. The investment cost was $ 9,892,4995.72, at a rate of 9% for the cost of financing, and only the available surplus of $ 140,025.04 was considered, which includes interest and 16% VAT.

Annex 1 shows the amortization table paying only the difference of the available surplus less their respective interests and VAT thereof, the debt would be settled in a term of 101 months, that is, in 8 years 5 months, without capital payments. Because the guarantee of the photovoltaic cells is 25 years, the disbursement during that period is represented, with and without the self-sustaining energy system. The results of Table 3 show that the disbursement is self-sustaining, the payment to the supplier for the supply and installation of the photovoltaic system, the interest costs and VAT produced by the financing, resulting in $ 15,325,142.54.

Table 3. Financial payment projection with and without the photovoltaic system to 25 years.

25 years	Energy payment	Solar panels	Total	Saving
With panels	$ 502,453.13	$ 14,822,689.41	$ 15,325,142.54	**$ 27,184,821.46**
Without panels	$ 42,509,964.00	$ -	$ 42,509,964.00	**63.95%**

Note. Made with information from table 1, table 2 and annex 1.

Environmental impact

The calculation of the carbon footprint according to the International Organization for Standardization (ISO) in its ISO 14067: 2013 for a photovoltaic system that will produce 39,013.36 kw / h monthly is as follows:

Table 4 Carbon Footprint of photovoltaic system

System production	**Kg CO2**	**Trees**	**Km**	**Automobiles**
39013.36	327,322.04	8,403.00	1,254,402.11	62.72

Note. Made with information from ISO 14067:2013

The result of the environmental impact is that they stop producing 327,322.04 Kg of CO2 without emitting into the environment, which would be equivalent to planting 8,403 trees, and stop driving 1,254,402.11 km in cars, considering that on average a vehicle travels 20,000 km per year. It would be the equivalent of 62.72 cars ceasing to circulate that year, this effect is annual.

Results of the investigation

The project shows financial feasibility considering the short-term deduction promoted by the Tax Administration System (SAT). Its contribution to the mitigation of the carbon footprint stands out, which improves the quality of life of the inhabitants in the vicinity of the company, considering that it is a medium and long-term benefit for present and future generations.

Conclusions

The opportunity for social responsibility and contribution to the improvement of the environment represents a commitment of companies where the state has established the necessary legislation to promote the reduction of the carbon footprint. The use of photovoltaic systems in companies is a good opportunity for this commitment. The Law for the use of renewable energy and the financing of the energy transition allows the use of clean and renewable energy sources and technologies. Encouraging this practice will have a positive effect by discouraging the consumption of fossil fuels. Although it is possible that the demand for electrical energy provided by CFE may decrease.

The investment shows that after the loan has been amortized, more than 60% of the system's use life remains, which allows generating financial savings that is more than proportional to the investment and represents protection against inflation by shielding the modification of CFE prices.

The benefit of the minimum monthly payment, as a result of the surplus provided by the photovoltaic system, can represent a greater value as a company, in addition to the fact that you can use the surpluses

for business strategies, technological development or training your personnel that give you competitive advantages over your competitors.

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Annex

Annex 1 Financial amortization table of the photovoltaic system

Credit amount	$ 9,892,495.72				
Term	101 Months	**ROI 8 years 5 months**			
Rate	9%				
Last payment	$ 141,699.88			16%	
New billing	$ 1,674.84	**Capital**	**Interest**	**VAT**	**Total**
Surplus	$ 140,025.04	$ 9,891,523.96	$ 4,251,004.70	$ 680,160.75	$ 14,822,689.41

Month	Capital payment	Interest payment	VAT 16% Interest	Total payment	Capital balance
1	$ 65,831.32	$ 74,193.72	$ 11,870.99	$ 140,025.04	$ 9,826,664.40
2	$ 66,325.05	$ 73,699.98	$ 11,792.00	$ 140,025.04	$ 9,760,339.35
3	$ 66,822.49	$ 73,202.55	$ 11,712.41	$ 140,025.04	$ 9,693,516.86
4	$ 67,323.66	$ 72,701.38	$ 11,632.22	$ 140,025.04	$ 9,626,193.20
5	$ 67,828.59	$ 72,196.45	$ 11,551.43	$ 140,025.04	$ 9,558,364.61
6	$ 68,337.30	$ 71,687.73	$ 11,470.04	$ 140,025.04	$ 9,490,027.31
7	$ 68,849.83	$ 71,175.20	$ 11,388.03	$ 140,025.04	$ 9,421,177.48
8	$ 69,366.21	$ 70,658.83	$ 11,305.41	$ 140,025.04	$ 9,351,811.27
9	$ 69,886.45	$ 70,138.58	$ 11,222.17	$ 140,025.04	$ 9,281,924.82
10	$ 70,410.60	$ 69,614.44	$ 11,138.31	$ 140,025.04	$ 9,211,514.22
11	$ 70,938.68	$ 69,086.36	$ 11,053.82	$ 140,025.04	$ 9,140,575.54
12	$ 71,470.72	$ 68,554.32	$ 10,968.69	$ 140,025.04	$ 9,069,104.82
13	$ 72,006.75	$ 68,018.29	$ 10,882.93	$ 140,025.04	$ 8,997,098.07
14	$ 72,546.80	$ 67,478.24	$ 10,796.52	$ 140,025.04	$ 8,924,551.27
15	$ 73,090.90	$ 66,934.13	$ 10,709.46	$ 140,025.04	$ 8,851,460.37
16	$ 73,639.08	$ 66,385.95	$ 10,621.75	$ 140,025.04	$ 8,777,821.29
17	$ 74,191.38	$ 65,833.66	$ 10,533.39	$ 140,025.04	$ 8,703,629.91
18	$ 74,747.81	$ 65,277.22	$ 10,444.36	$ 140,025.04	$ 8,628,882.10
19	$ 75,308.42	$ 64,716.62	$ 10,354.66	$ 140,025.04	$ 8,553,573.68
20	$ 75,873.23	$ 64,151.80	$ 10,264.29	$ 140,025.04	$ 8,477,700.44
21	$ 76,442.28	$ 63,582.75	$ 10,173.24	$ 140,025.04	$ 8,401,258.16
22	$ 77,015.60	$ 63,009.44	$ 10,081.51	$ 140,025.04	$ 8,324,242.56
23	$ 77,593.22	$ 62,431.82	$ 9,989.09	$ 140,025.04	$ 8,246,649.34
24	$ 78,175.17	$ 61,849.87	$ 9,895.98	$ 140,025.04	$ 8,168,474.18
25	$ 78,761.48	$ 61,263.56	$ 9,802.17	$ 140,025.04	$ 8,089,712.70
26	$ 79,352.19	$ 60,672.85	$ 9,707.66	$ 140,025.04	$ 8,010,360.51
27	$ 79,947.33	$ 60,077.70	$ 9,612.43	$ 140,025.04	$ 7,930,413.17
28	$ 80,546.94	$ 59,478.10	$ 9,516.50	$ 140,025.04	$ 7,849,866.24
29	$ 81,151.04	$ 58,874.00	$ 9,419.84	$ 140,025.04	$ 7,768,715.20
30	$ 81,759.67	$ 58,265.36	$ 9,322.46	$ 140,025.04	$ 7,686,955.52
31	$ 82,372.87	$ 57,652.17	$ 9,224.35	$ 140,025.04	$ 7,604,582.65
32	$ 82,990.67	$ 57,034.37	$ 9,125.50	$ 140,025.04	$ 7,521,591.99
33	$ 83,613.10	$ 56,411.94	$ 9,025.91	$ 140,025.04	$ 7,437,978.89
34	$ 84,240.19	$ 55,784.84	$ 8,925.57	$ 140,025.04	$ 7,353,738.70
35	$ 84,872.00	$ 55,153.04	$ 8,824.49	$ 140,025.04	$ 7,268,866.70
36	$ 85,508.54	$ 54,516.50	$ 8,722.64	$ 140,025.04	$ 7,183,358.16
37	$ 86,149.85	$ 53,875.19	$ 8,620.03	$ 140,025.04	$ 7,097,208.31
38	$ 86,795.97	$ 53,229.06	$ 8,516.65	$ 140,025.04	$ 7,010,412.34
39	$ 87,446.94	$ 52,578.09	$ 8,412.49	$ 140,025.04	$ 6,922,965.40
40	$ 88,102.80	$ 51,922.24	$ 8,307.56	$ 140,025.04	$ 6,834,862.60
41	$ 88,763.57	$ 51,261.47	$ 8,201.84	$ 140,025.04	$ 6,746,099.03
42	$ 89,429.29	$ 50,595.74	$ 8,095.32	$ 140,025.04	$ 6,656,669.74

43	$ 90,100.01	$ 49,925.02	$ 7,988.00	$ 140,025.04	$ 6,566,569.73
44	$ 90,775.76	$ 49,249.27	$ 7,879.88	$ 140,025.04	$ 6,475,793.96
45	$ 91,456.58	$ 48,568.45	$ 7,770.95	$ 140,025.04	$ 6,384,337.38
46	$ 92,142.51	$ 47,882.53	$ 7,661.20	$ 140,025.04	$ 6,292,194.88
47	$ 92,833.57	$ 47,191.46	$ 7,550.63	$ 140,025.04	$ 6,199,361.30
48	$ 93,529.83	$ 46,495.21	$ 7,439.23	$ 140,025.04	$ 6,105,831.48
49	$ 94,231.30	$ 45,793.74	$ 7,327.00	$ 140,025.04	$ 6,011,600.18
50	$ 94,938.03	$ 45,087.00	$ 7,213.92	$ 140,025.04	$ 5,916,662.14
51	$ 95,650.07	$ 44,374.97	$ 7,099.99	$ 140,025.04	$ 5,821,012.07
52	$ 96,367.45	$ 43,657.59	$ 6,985.21	$ 140,025.04	$ 5,724,644.63
53	$ 97,090.20	$ 42,934.83	$ 6,869.57	$ 140,025.04	$ 5,627,554.42
54	$ 97,818.38	$ 42,206.66	$ 6,753.07	$ 140,025.04	$ 5,529,736.05
55	$ 98,552.02	$ 41,473.02	$ 6,635.68	$ 140,025.04	$ 5,431,184.03
56	$ 99,291.16	$ 40,733.88	$ 6,517.42	$ 140,025.04	$ 5,331,892.87
57	$ 100,035.84	$ 39,989.20	$ 6,398.27	$ 140,025.04	$ 5,231,857.03
58	$ 100,786.11	$ 39,238.93	$ 6,278.23	$ 140,025.04	$ 5,131,070.93
59	$ 101,542.00	$ 38,483.03	$ 6,157.29	$ 140,025.04	$ 5,029,528.92
60	$ 102,303.57	$ 37,721.47	$ 6,035.43	$ 140,025.04	$ 4,927,225.35
61	$ 103,070.85	$ 36,954.19	$ 5,912.67	$ 140,025.04	$ 4,824,154.51
62	$ 103,843.88	$ 36,181.16	$ 5,788.99	$ 140,025.04	$ 4,720,310.63
63	$ 104,622.71	$ 35,402.33	$ 5,664.37	$ 140,025.04	$ 4,615,687.92
64	$ 105,407.38	$ 34,617.66	$ 5,538.83	$ 140,025.04	$ 4,510,280.55
65	$ 106,197.93	$ 33,827.10	$ 5,412.34	$ 140,025.04	$ 4,404,082.61
66	$ 106,994.42	$ 33,030.62	$ 5,284.90	$ 140,025.04	$ 4,297,088.20
67	$ 107,796.87	$ 32,228.16	$ 5,156.51	$ 140,025.04	$ 4,189,291.32
68	$ 108,605.35	$ 31,419.68	$ 5,027.15	$ 140,025.04	$ 4,080,685.97
69	$ 109,419.89	$ 30,605.14	$ 4,896.82	$ 140,025.04	$ 3,971,266.08
70	$ 110,240.54	$ 29,784.50	$ 4,765.52	$ 140,025.04	$ 3,861,025.54
71	$ 111,067.34	$ 28,957.69	$ 4,633.23	$ 140,025.04	$ 3,749,958.19
72	$ 111,900.35	$ 28,124.69	$ 4,499.95	$ 140,025.04	$ 3,638,057.84
73	$ 112,739.60	$ 27,285.43	$ 4,365.67	$ 140,025.04	$ 3,525,318.24
74	$ 113,585.15	$ 26,439.89	$ 4,230.38	$ 140,025.04	$ 3,411,733.09
75	$ 114,437.04	$ 25,588.00	$ 4,094.08	$ 140,025.04	$ 3,297,296.05
76	$ 115,295.32	$ 24,729.72	$ 3,956.76	$ 140,025.04	$ 3,182,000.74
77	$ 116,160.03	$ 23,865.01	$ 3,818.40	$ 140,025.04	$ 3,065,840.71
78	$ 117,031.23	$ 22,993.81	$ 3,679.01	$ 140,025.04	$ 2,948,809.48
79	$ 117,908.97	$ 22,116.07	$ 3,538.57	$ 140,025.04	$ 2,830,900.51
80	$ 118,793.28	$ 21,231.75	$ 3,397.08	$ 140,025.04	$ 2,712,107.23
81	$ 119,684.23	$ 20,340.80	$ 3,254.53	$ 140,025.04	$ 2,592,423.00
82	$ 120,581.86	$ 19,443.17	$ 3,110.91	$ 140,025.04	$ 2,471,841.13
83	$ 121,486.23	$ 18,538.81	$ 2,966.21	$ 140,025.04	$ 2,350,354.91
84	$ 122,397.37	$ 17,627.66	$ 2,820.43	$ 140,025.04	$ 2,227,957.53
85	$ 123,315.35	$ 16,709.68	$ 2,673.55	$ 140,025.04	$ 2,104,642.18
86	$ 124,240.22	$ 15,784.82	$ 2,525.57	$ 140,025.04	$ 1,980,401.96
87	$ 125,172.02	$ 14,853.01	$ 2,376.48	$ 140,025.04	$ 1,855,229.93

88	$ 126,110.81	$ 13,914.22	$ 2,226.28	$ 140,025.04	$ 1,729,119.12
89	$ 127,056.64	$ 12,968.39	$ 2,074.94	$ 140,025.04	$ 1,602,062.48
90	$ 128,009.57	$ 12,015.47	$ 1,922.47	$ 140,025.04	$ 1,474,052.91
91	$ 128,969.64	$ 11,055.40	$ 1,768.86	$ 140,025.04	$ 1,345,083.27
92	$ 129,936.91	$ 10,088.12	$ 1,614.10	$ 140,025.04	$ 1,215,146.36
93	$ 130,911.44	$ 9,113.60	$ 1,458.18	$ 140,025.04	$ 1,084,234.92
94	$ 131,893.27	$ 8,131.76	$ 1,301.08	$ 140,025.04	$ 952,341.65
95	$ 132,882.47	$ 7,142.56	$ 1,142.81	$ 140,025.04	$ 819,459.18
96	$ 133,879.09	$ 6,145.94	$ 983.35	$ 140,025.04	$ 685,580.08
97	$ 134,883.19	$ 5,141.85	$ 822.70	$ 140,025.04	$ 550,696.90
98	$ 135,894.81	$ 4,130.23	$ 660.84	$ 140,025.04	$ 414,802.09
99	$ 136,914.02	$ 3,111.02	$ 497.76	$ 140,025.04	$ 277,888.07
100	$ 137,940.88	$ 2,084.16	$ 333.47	$ 140,025.04	$ 139,947.19
101	$ 138,975.43	$ 1,049.60	$ 167.94	$ 140,025.04	$ 971.76

Note. Elaborate at a simple rate of 9% on unpaid balances adjusted to the excess payment capacity